

**SERVICE
MANUAL**

2220

marantz

model 2220

Stereophonic Receiver

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INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 2220 Stereophonic Receiver.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instruction should be read carefully. No attempt should be made to proceed without a good understanding of the operation in the receiver.

The part lists furnish information by which replacement part may be ordered from the Marantz Company. A simple description is included for parts which can be usually be obtained through local suppliers.

1. Service Notes

As can be seen from the circuit diagram, the chassis of Model 2220 consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. FM Front End & AM Tuner mounted on P.C. Board, P100
2. FM IF Amplifier, Detector, Muting Control and Meter Amplifier Unit mounted on P.C. Board, P200
3. MPX Stereo Decoding Amplifier mounted on P.C. Board, P300
4. Phono Amplifier mounted on P.C. Board, P900
5. Tone Amplifier mounted on P.C. Board, P500
6. Tone Control Volume Unit mounted on P.C. Board, P650
7. Power Amplifier mounted on P.C. Board, P700
8. Power Supply mounted on P.C. Board, P800
9. Loudness, Muting, High and Low Filter Switch Unit mounted on P.C. Board, P600

2. AM Tuner

All components except Tuning capacitor and ferrite bar antenna are mounted on a printed circuit board P100.

The AM signals induced in a ferrite bar antenna are applied to the base of Mixer transistor H102 through a capacitor of C109, while the local oscillator voltage is injected to the emitter of H102 through the capacitor C110. Both AM signals and oscillating voltage are mixed at the base-emitter junction and converted into 455KHz intermediate frequency. The resulting IF signal is applied to the first IF transformer L102 consisting of one ceramic filter and two tuned circuits.

The output of L102 is led to the transistor H103 which in turn applies its output to the transistor of next stage H104. The fully amplified IF output is then applied to the diode H108 to detect audible signal through the detector transformer L103. The detected audio signal is filtered and amplified and the final audio output is obtained from the collector of H105 and applied one to the tape out jacks through monitor switch on the front panel and the other to the function rotary switch.

The DC component of the detected IF signal is used as a AGC voltage to control emitter current of H103 and H102 through the resistors R113 and R106 respectively. A part of IF signal output is also applied to the diode H109 through a capacitor C125 and rectified to obtain DC current for energizing the AM signal strength meter M001.

3. FM Tuner

The FM Tuner section of Model 2220 is divided into three functional blocks: FM front end, IF amplifier & Detector, Muting control and MPX stereo decoding circuit.

FM signals induced on a FM antenna are led to FM antenna coil L106. These signals are then applied to the FET RF amplifier which in turn applies its output to the next Transistor Mixer H112 through a high-Q tuned circuit. The Mixer converts its input signal into 10.7MHz intermediate frequency and amplifies it. The H111 is a local oscillator and its output is injected

into the base of Mixer transistor, the injection voltage is about 50mV. The 10.7MHz front end IF output is led to the next IF amplifier unit through a coaxial cable.

The IF amplifier unit consists of five stages of IF amplifiers. Two pieces of ceramic filters are used to obtain high selectivity a pair of symmetrical diode limiter is also employed for the best limiting characteristics, improved capture ratio and good AM suppression.

A part of IF amplifier H202 is rectified by the diodes H210 and H211 and its DC output is fed back to the gate of FET RF amplifier to decrease the gain of it with increased input signal strength.

3-1 Muting and Auto-Stereo Switching Circuits

The muting circuit consisting of all solid-state electrical switching has been incorporated in the Model 2220.

The DC voltage obtained by rectifying a part of IF output signal from the H204 is applied to the base of H207 and turns on it if the IF output is greater than predetermined level (muting threshold level). When the H207 is turned on, the H208 is turned off, thus allowing the emitter-collector resistance of the H208 increasing and the collector voltage rises about 8V. The increased collector voltage increases the base bias voltage and makes the switching transistor H209 turn on, thus decreasing the collector-emitter resistance to near zero ohm and allowing the power supply path to the H205 closed.

When the input signal is lower than the predetermined level, the DC output obtained is small and can not turn on the H207, thus the H207 keeps its turn-off state and this makes H208 turn on, decreasing the collector voltage and turning off H209. Thus no power is supplied to the H205 and signals below the threshold level are muted out. The muting threshold level can be varied by adjusting the trimming resistor R245.

The DC voltage developed at the collector of H208 is also used to make the Auto-Stereo switching transistor H304 turn on and off.

3-2 MPX Stereo Decoding Circuit

Non-equalized audio signals are applied to the first amplifier H301 which serves as a tuned amplifier for the pilot signal in the composite signals and as a buffer amplifier for the rest audio signals. The amplified 19KHz pilot signal is led to the second 19KHz amplifier H302 and further amplified if switching transistor H304 is turned on by the controlling DC signal as described above. The 19KHz pilot signal is rectified by the doubler circuit consisting of H312 and H313 to obtain synchronized 38KHz signal to drive the H303. The H303 is the 38KHz tuned amplifier and supplies its output to the switching matrix circuit consisting of four diodes. The composite signals are applied to the center tap of switching transformer L304 and decoded into left and right channel signals, then both channel signals are led to the crosstalk cancelling amplifier which utilizes complementary configuration with NPN and PNP transistors through de-emphasis networks. Transistors H310 and H311 are buffer amplifiers and their outputs are led to the function switch.

3.3 Suggestion for Trouble Shooting of FM Tuner

3.3.1 Symptom: No FM Reception

First turn ON the power switch and try to tune FM stations. Rotate the fly-wheel tuning knob slowly and observe the FM tuning meter. If the meter deflect at several frequencies received, the circuits preceding the IF amplifier H204 may have no failure. When no reading is obtained in the meter, check FM local oscillator circuit, using a RF VTVM. The normal local oscillator voltage is one or two volts (rms) at the tuning capacitor, depending on the tuning capacitor position. If the local oscillator voltage is normal, next check all voltage distributions in the FM circuits and compare them with those shown in the circuit diagram. When the tuning meter deflects but no sound is obtained, check audio circuits, using a high sensitive oscilloscope.

3.3.2 Symptom: No Stereo Separation

First check the "MONO" switch is in normal out position. Connect a FM-~~RF~~ signal generator output modulated by a stereo modulator to the rear FM antenna terminals, and check the stereo beacon is turned on or not. If not turned on, check for 19KHz pilot signal and 38KHz switching signal, using an oscilloscope.

4. Phono and Pre-amplifier

Signals from the tuner and AUX jacks are applied to the selector switch. Signals from the PHONO jacks are applied to the phono-amplifier consisting of transistor H901, H903 and H905. The gain of the amplifier is 40 dB. The amplified and equalized phono-signals are, then, fed to other section of the selector switch which, in turn, applies output signals from the tuner, phono-amplifier and AUX jacks to the TAPE MONITOR switch and TAPE OUT jacks. The TAPE MONITOR switch applies the signals to the balance and volume controls.

The controlled signals are fed to the pre-amplifier consisting of H501, H503 and H505. Frequency response of the amplifier can be varied by BASS and TREBLE controls. The controlled output are then led to the main amplifier through high and low pass filter pushswitches.

5. Main Amplifier

Transistor H701 is a pre-driver coupled to the transistor H703 through capacitor C711. Transistor H703 drives the inverter transistors H709 and H710 which, in turn, drive the power stage consisting of H001 and H002. Transistors H705 and H709 are current limiters and operate as power protecting circuits.

Excessive currents flowing into the power stage are detected by the resistors R741 and R745 and the resultant variations are applied to the transistors H705 and H707 and make them turned on. This decreases the current flowing into the H709 and H710. In this way the currents flowing in the power stage (H001 and H002) are restricted within a safe value.

6. Audio Trouble Analysis

1. Excessive line consumption
 - a. Check for shorted rectifiers H007, H804, H805.
 - b. Check for shorted transistors H001, H002, Check L002 for short.
2. No line consumption or zero bias.
 - a. Check line cord, fuse, shorted H005, H006, H713 & H714.
 - b. Check for open rectifiers H007, H804, H805 or open L002.
3. High hum and noise level.
4. Parasitic oscillation
 - a. Check for defective capacitors, C705, C706, C713, C714, C723 & C724.
5. Improper clipping
 - a. Check for proper adjustment of 723 & 724.

7. Test Equipment Required for Servicing

Table 1 lists the test equipment required for servicing the Model 2220 Receiver.

Item	Manufacturer and Model No.	Use
AM Signal Generator		Signal source for AM alignment
Test Loop		Use with AM Signal generator
FM Signal Generator	Less than 0.3% distortion	Signal source for FM alignment
Stereo Modulator	Less than 0.3% distortion	Stereo Separation alignment and trouble shooting
Audio Oscillator	Weston Model CVO-100P, less than 0.02% residual distortion is required.	Sinewave and squarewave signal source.
Oscilloscope	High sensitivity with DC horizontal and vertical amplifiers.	Waveform analysis and Trouble Shooting, and ASO alignment.
VTVM	With AC, DC, RF range	Voltage measurements.
Circuit Tester		Trouble Shooting
AC Wattmeter	Simpson, Model 390	Monitors primary power to Amplifier.
AC Ammeter	Commercial Grade (1-10A)	Monitors amplifier output under short circuit condition.
Line Voltmeter	Commercial Grade (0-150VAC)	Monitors potential of primary power to amplifier
Variable Autotransformer (0-140VAC, 10 amps.)	Powerstat, Model 116B	Adjusts level of primary power to amplifier.
Shorting Plug	Use phono plug with 600 ohm across center pin and shell.	Shorts amplifier input to eliminate noise pickup.
Output Load (8 ohms, 0.5%, 100W)	Commercial Grade	Provides 8-ohm load for amplifier output termination.
Output Load (4 ohms, 0.5%, 100W)	Commercial Grade	Provides 4-ohm load for amplifier output termination.

8. AM Alignment Procedure**AM IF Alignment**

1. Connect a sweep generator to the J102 and an alignment scope to the resistor R121(out side).
2. Rotate each core of IF transformers L102 and L103 for the maximum height and flat top symmetrical response.

AM Frequency Range and Tracking Alignment

1. Set AM signal generator to 525 KHz. Turn the tuning capacitor fully closed (place the tuning pointer at the low end) and adjust the oscillator coil L101 for maximum audio output.
2. Set the signal generator to 1650 KHz. Place the tuning pointer in the high frequency end and adjust the trimming capacitor CA-2 for maximum audio output.

3. Repeat step 1 and 2 until no further adjustment is necessary.
4. Set the generator to 600 KHz, tune the receiver to the same frequency and adjust a slug core of AM ferrite rod antenna for maximum output.
5. Set the generator to 1400 KHz and tune the receiver to the same frequency and adjust the trimming capacitor CA-1 for maximum output.
6. Repeat procedures 4 and 5 until no further adjustment is necessary.

Note: During tracking alignment reduce the signal generator output as necessary to avoid AGC action.

9. FM Alignment Procedure

1. Connect a FM signal generator to the FM antenna terminals and an oscilloscope and an audio distortion analyzer to the tape output jack on the rear panel.
2. Set the FM SG to 87.5 MHz and provide about 3 to 5 μ V. Place the tuning pointer at the low frequency end by rotating the tuning knob and adjust the core of oscillator coil L108 to obtain maximum audio output.
3. Set the FM SG to 108.5 MHz and provide about 3 to 5 μ V. Rotate the tuning knob and place the tuning pointer at the high frequency end and adjust the trimming capacitor C152 for maximum output.
4. Repeat steps 2 and 3 until no further adjustment is necessary.
5. Set the FM SG to 90 MHz and tune the receiver to the same frequency. Decrease signal generator output until the audio output level decreases with the decreasing generator output. Adjust the RF coil L107 and antenna coil L106 and IF transformer L109 for minimum audio distortion.
6. Set the FM SG to 106 MHz and tune the receiver to the same frequency. Decrease the signal generator output until the audio output level decreases with the decreasing generator output. Adjust the trimming capacitor CF-1 and CF-2 for minimum distortion.
7. Repeat steps 5 and 6 until no further adjustment is necessary.
8. Connect a DC VTVM with 1 V range selected to the resistor R237 (inside) and adjust the secondary core (black) of discriminator transformer L201 so that no voltage reading is obtained on the VTVM at no signal. Next set the FM SG to 98 MHz and increase the output level 1 K μ V, then tune the receiver to the same frequency so that no deflection is obtained on the VTVM. Adjust primary core (pink) of L201 for minimum distortion.

10. Stereo Separation Alignment

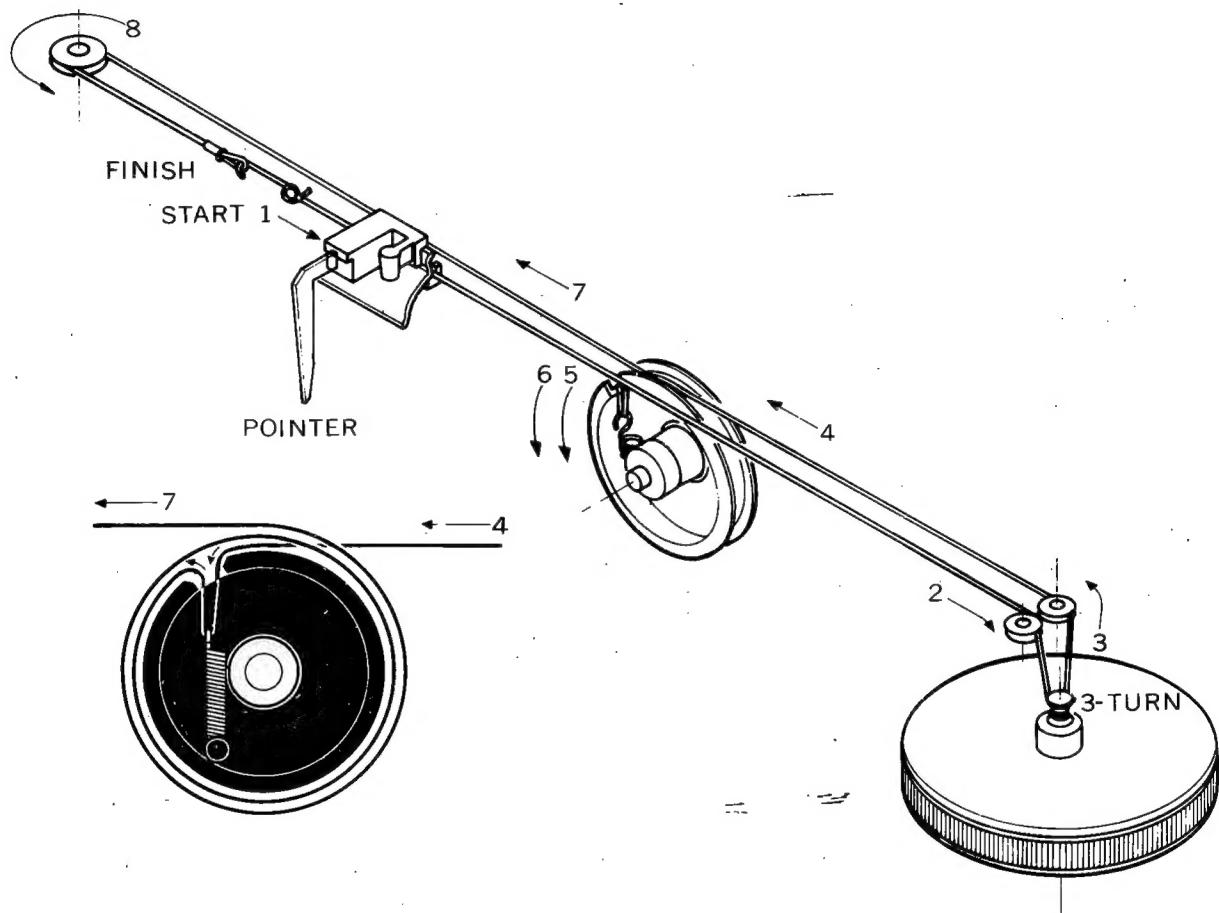
1. Set the FM SG to provide 1K μ V at 98 MHz. Tune the receiver to the same frequency so that the VTVM connected to the Resistor R237 (inside) will give no readings.
2. Modulate the FM SG with 67 KHz audio frequency. Connect an oscilloscope to the R315. Adjust the core of L303 for minimum height of the 67 KHz signal on the scope.
3. Modulate the FM SG output with stereo composite signal consisting of subchannel signal only (of course, a pilot signal must be included). Adjust the core of L304 for maximum audio output, then modulate the signal generator output with a stereo composite signal consisting of L channel signal only and again adjust the core of L304 for maximum audio output.
4. Adjust the trimming resistor R329 for maximum and same separation in both channels.

11. Muting Threshold Adjustment

1. Set the FM SG output to provide 12.5 μ V (IHF) at 98 MHz and tune receiver to the same frequency. Adjust the trimming resistor R245 for the threshold level of 12.5 μ V. (During this adjustment turn the MUTING pushswitch "on".)

12. Audio Adjustment

1. Connect a VTVM across the resistor R747 and adjust the trimming resistor R729 until the VTVM reads 7.5mV DC. For the other channel connect the VTVM across the R748 and adjust the R730 for the same reading.
2. Connect an oscilloscope across the speaker terminals. Apply an audio signal of 1 KHz to the AUX jacks and increase the audio signal until the audio output on the scope begin to start clipping. Adjust the trimming resistor R723 for equal and symmetrical clipping. For the other channel adjust the R724.

**Figure 1. Dial Stringing**

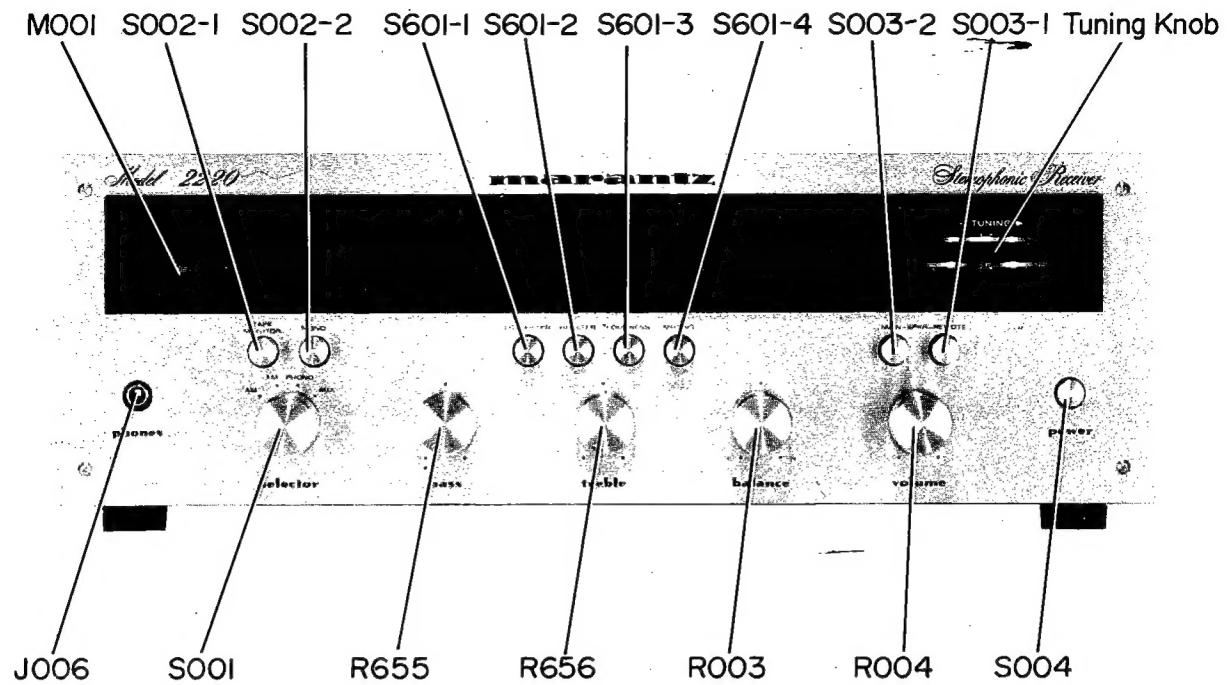


Figure 2. Front Panel Adjustments and Component Locations

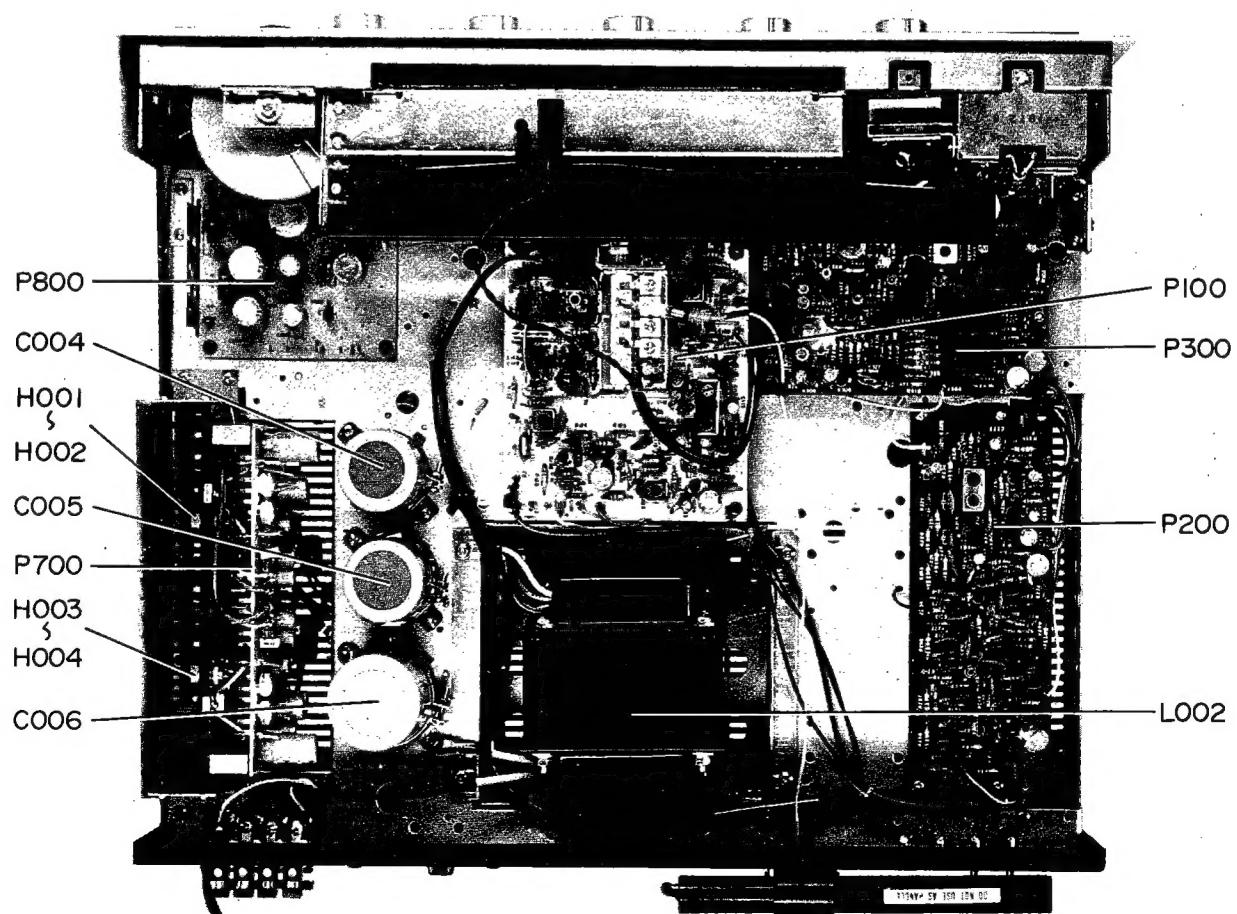


Figure 3. Main Chassis Component Locations (Top View)

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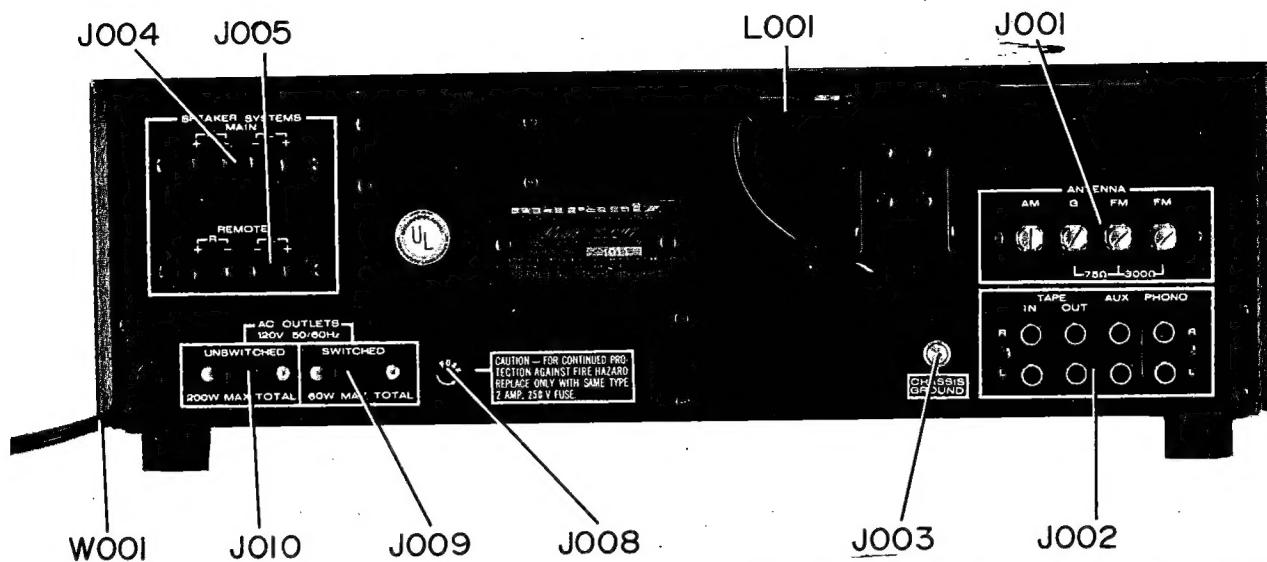


Figure 4. Rear Panel Adjustment and Component Locations

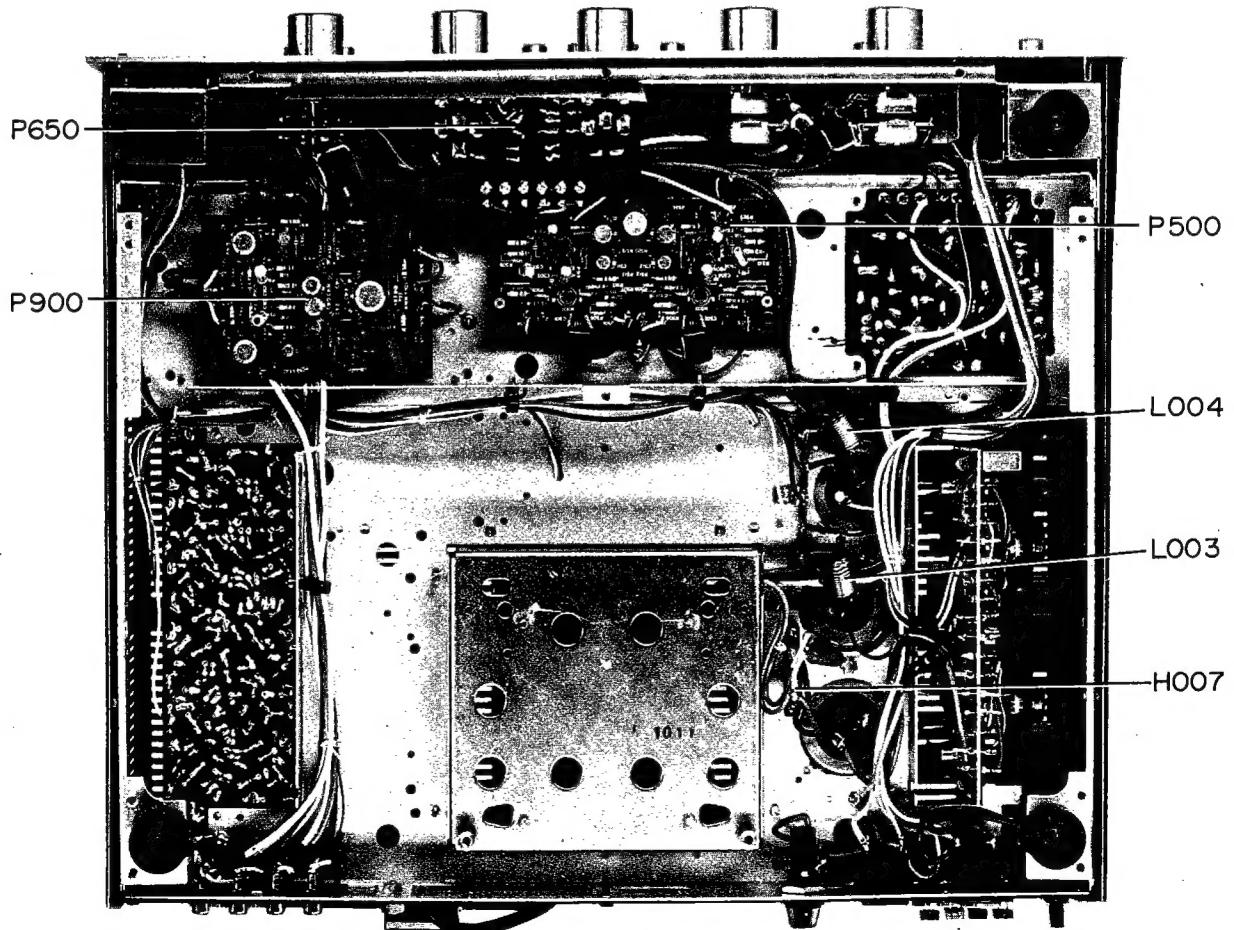


Figure 5. Main Chassis Component Locations (Bottom View)

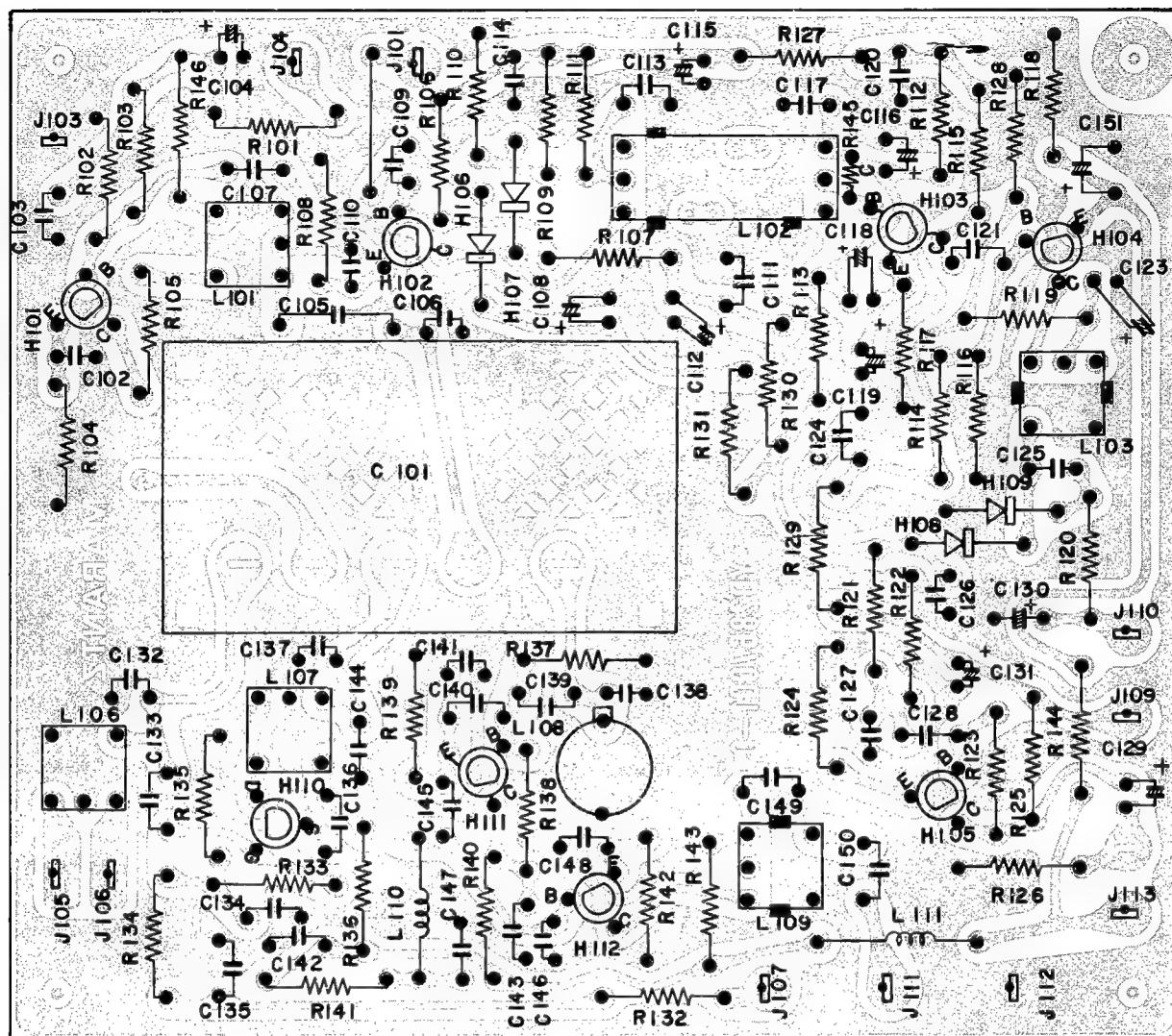


Figure 6. FM Front End and AM Tuner Assembly P100 Component Locations

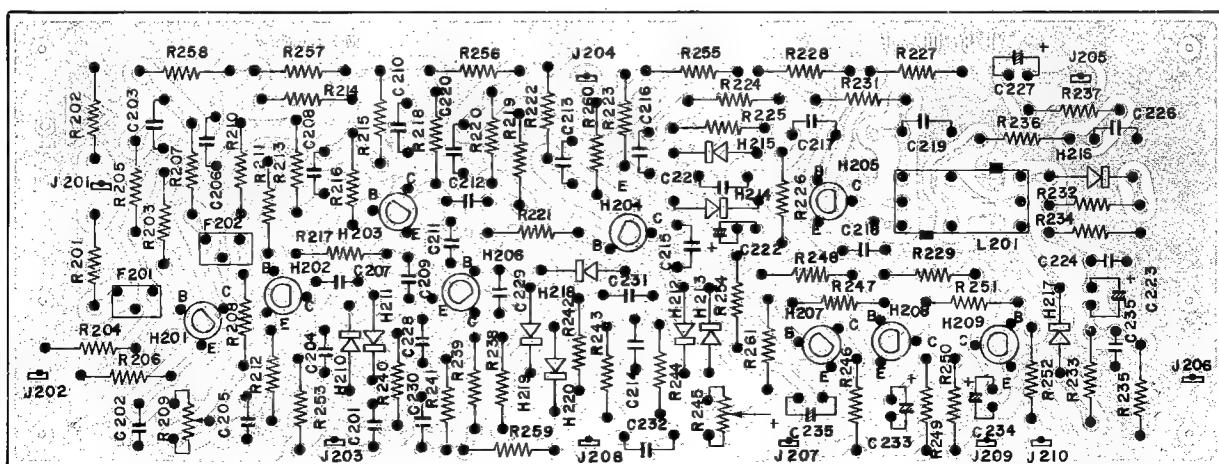


Figure 7. FM IF Amplifier, Detector, Muting Control and Meter Amplifier Unit Assembly P200 Component Locations

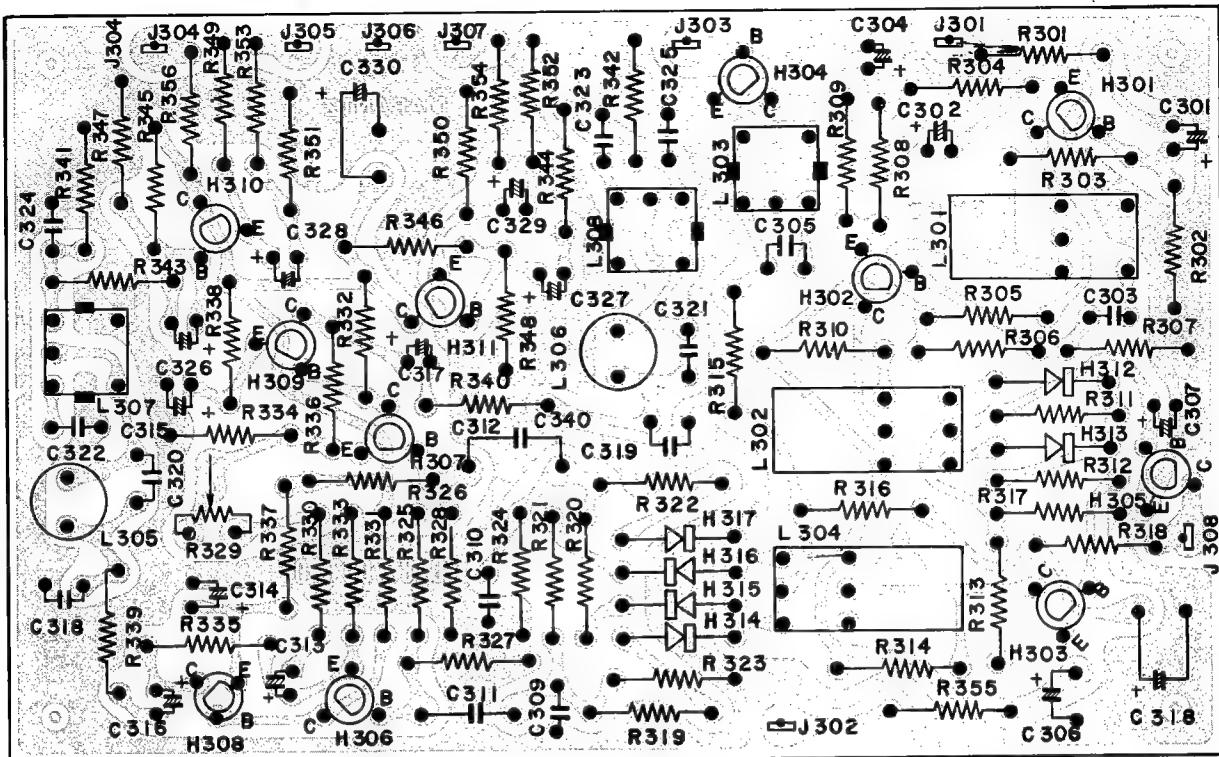


Figure 8. MPX Stereo Decoding Amplifier Assembly P300 Component Locations

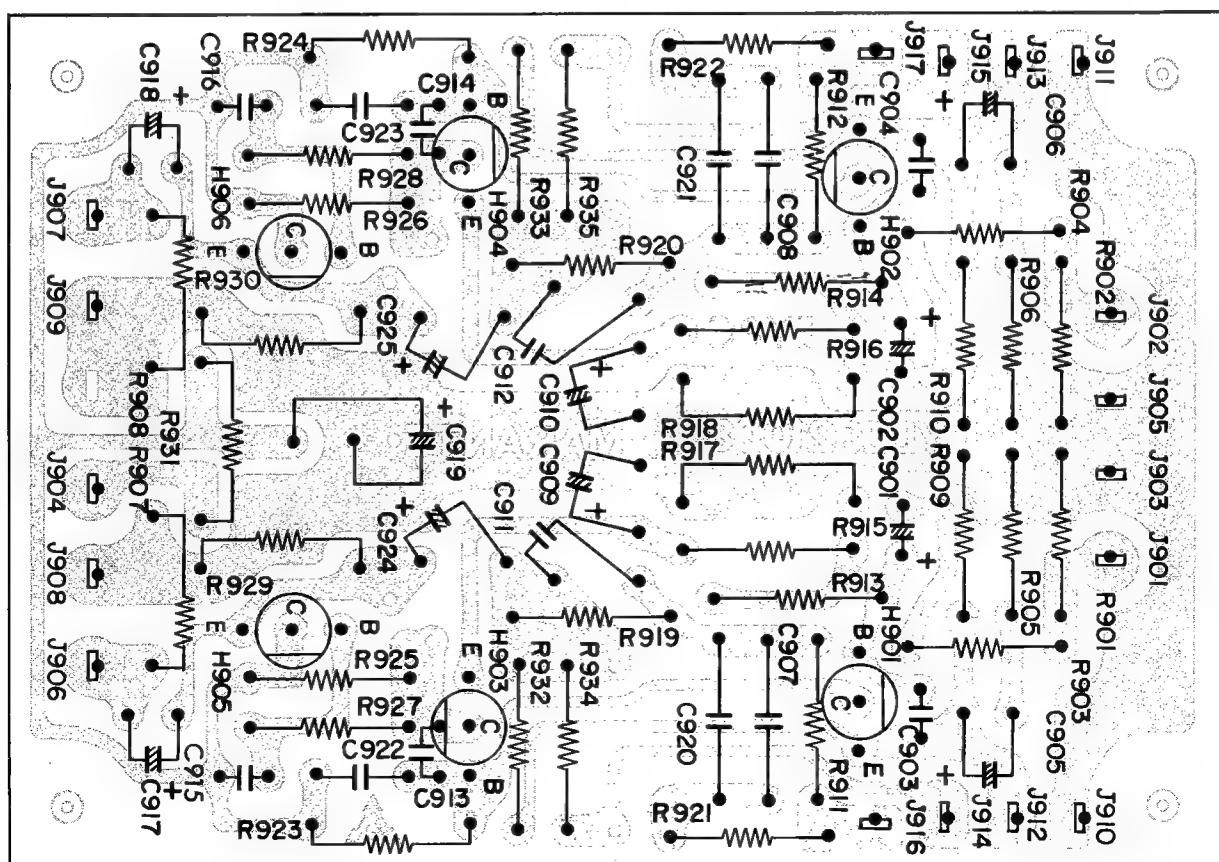


Figure 9. Phono Amplifier Assembly P900 Component Locations

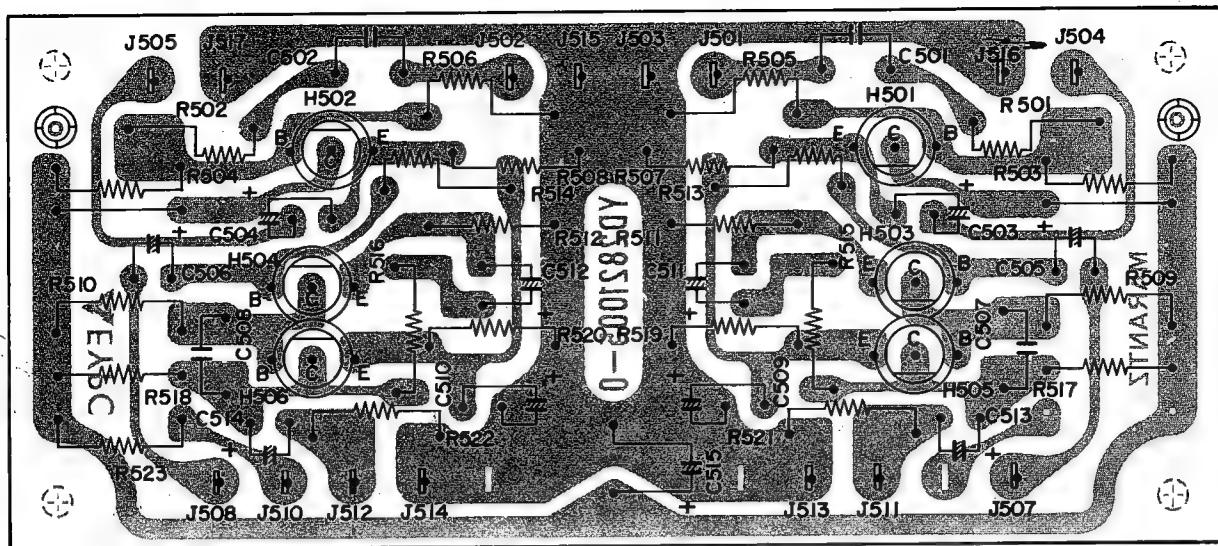


Figure 10. Tone Amplifier Assembly P500 Component Locations

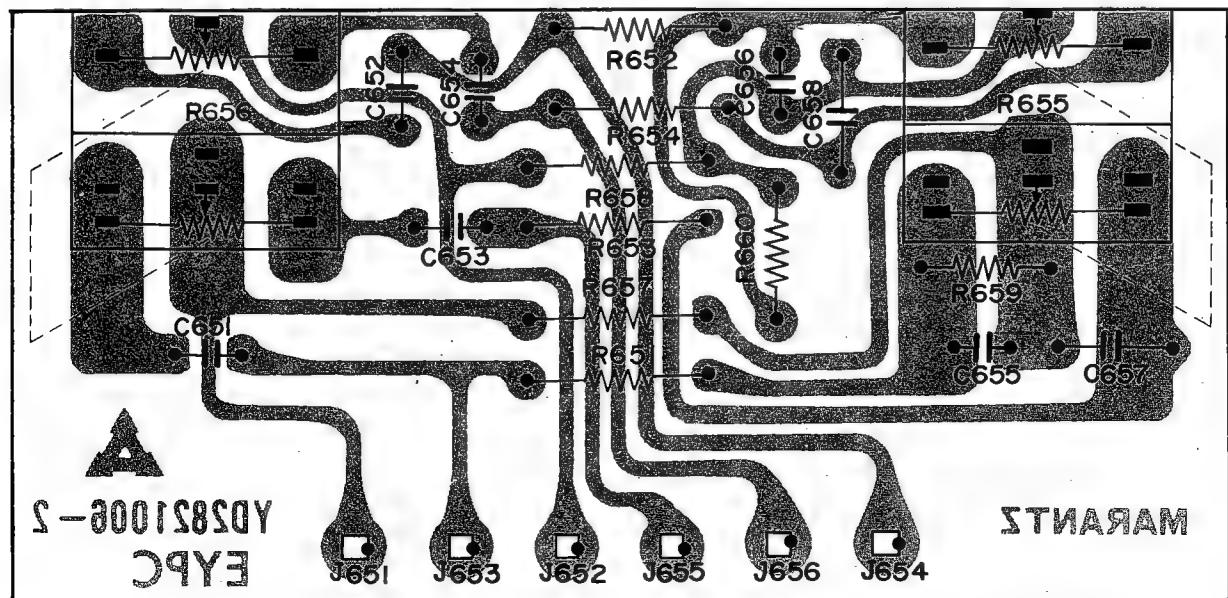


Figure 11. Tone Control Volume Unit Assembly P650 Component Locations

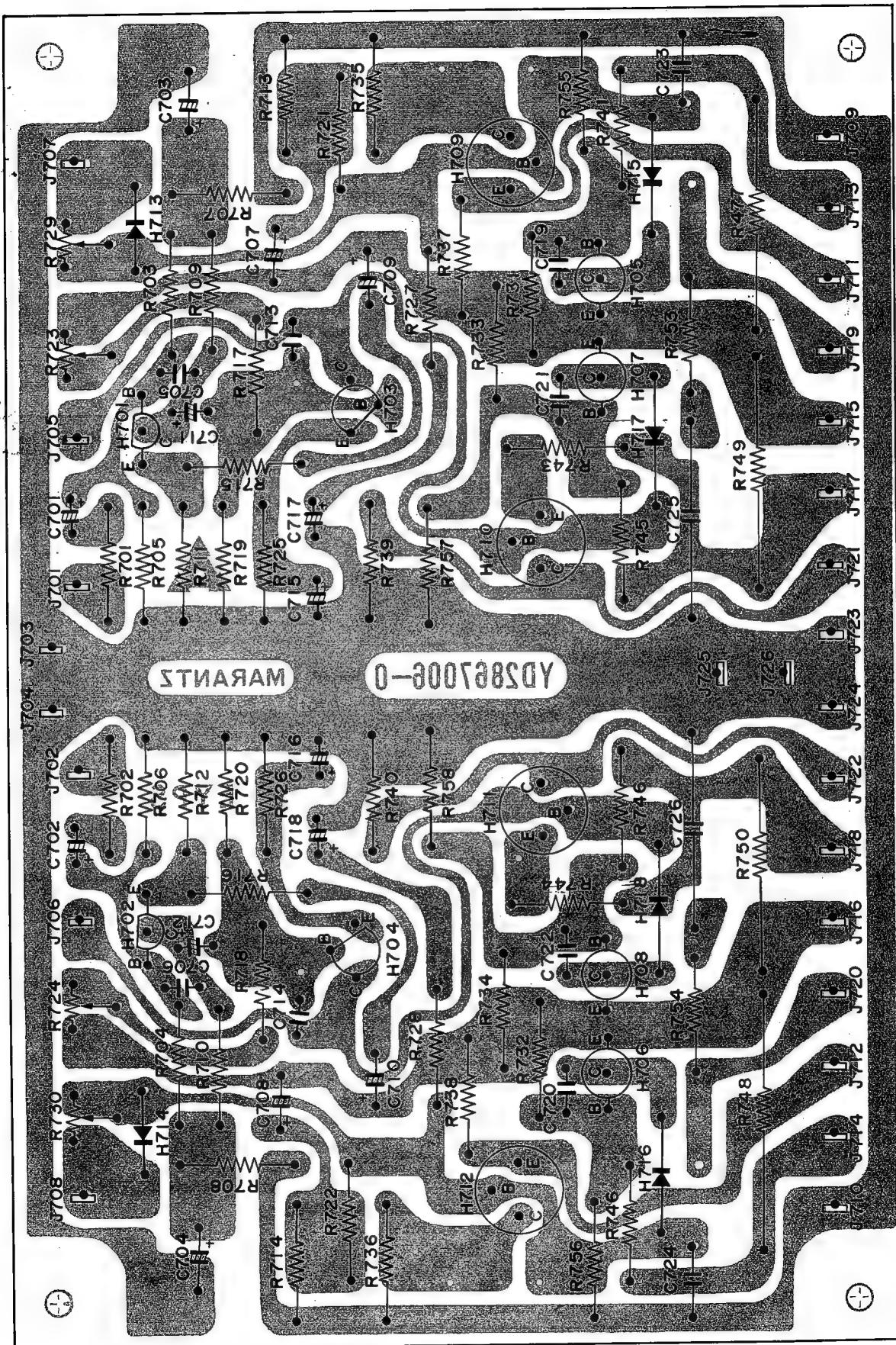


Figure 12. Power Amplifier Assembly P700 Component Locations

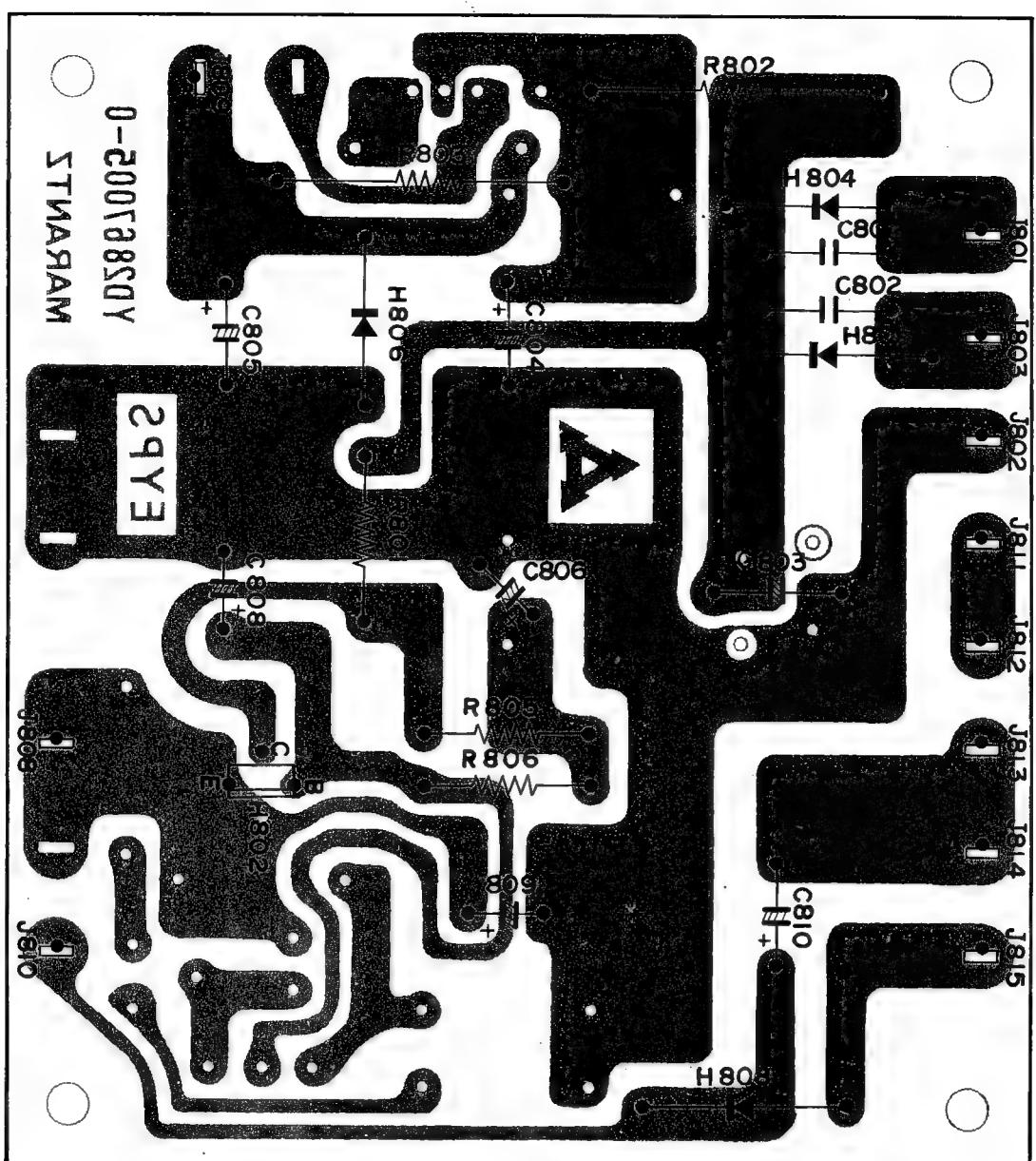


Figure 13. Power Supply Assembly P800 Component Locations

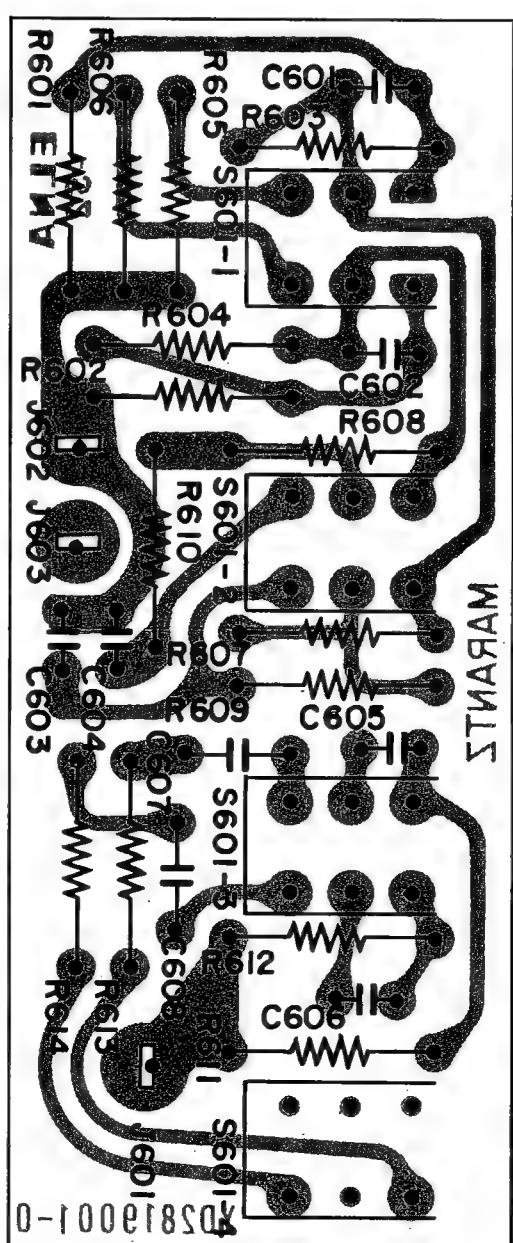


Figure 14. Loudness, Muting, High and Low-Filter Switch Unit Assembly P600 Component Locations

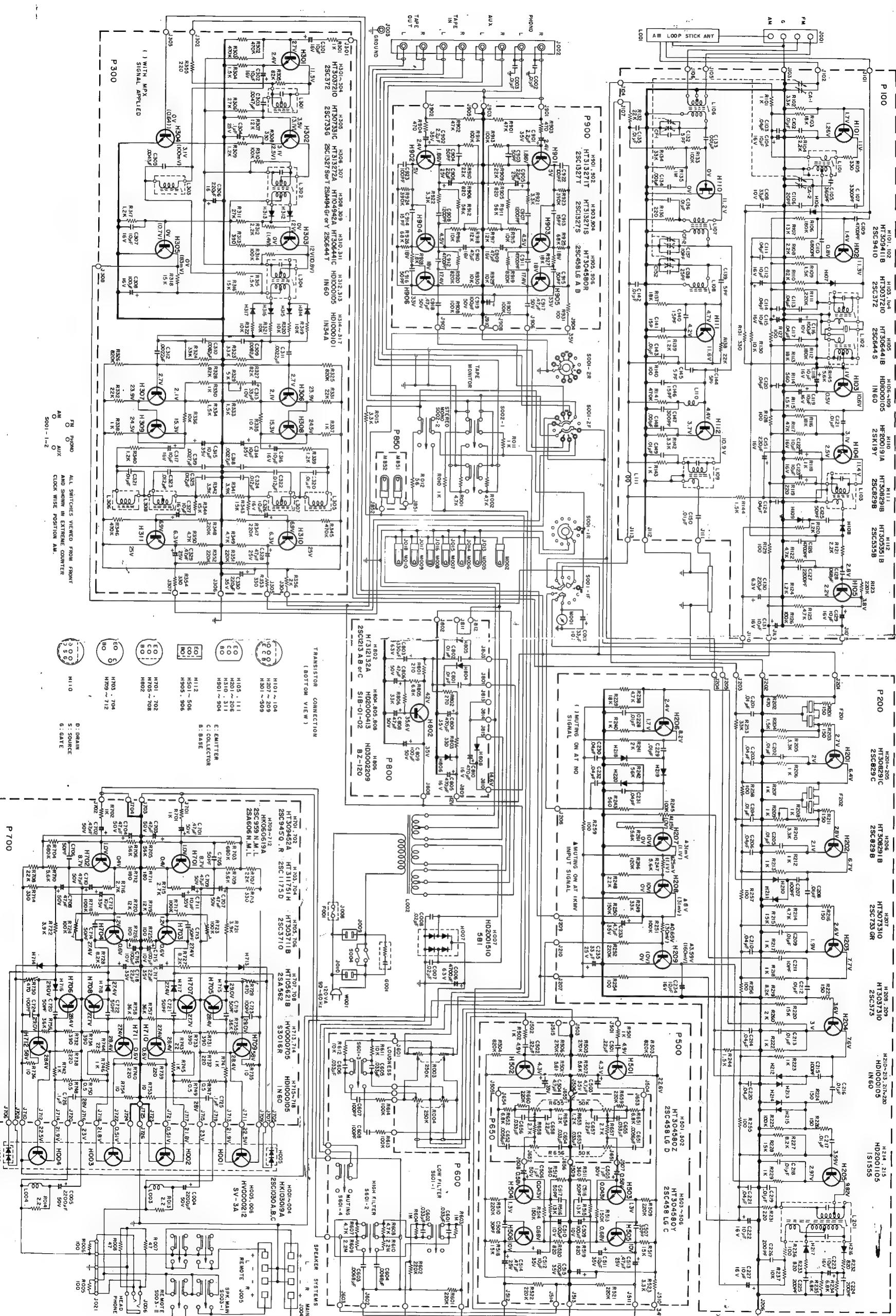


Figure 15. Schematic Diagram

PARTS LIST

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
A	286740140	Frame Assembly	0303	281810501	Chassis
0102	286706301	Escutcheon	0304	281810502	Chassis
0202	281840101	Frame	0305	281810101	Support
0204	281815801	Window	0306	286710101	Support
0215	273125901	Bush	0307	286716002	Bracket
0219	282105302	Cover	0308	51570306B	P.H. Tapt Screw
0226	281825905	Bush	0315	281816003	Bracket
B	286716040	Bracket Assembly	0316	281816004	Bracket
0126	286726501	Indicator	0318	281816001	Bracket
0313	282116002	Bracket	0319	282610106	Support
0902	51100308S	B.H.M. Screw	0320	282610105	Support
0903	53110303E	Hexagon Nut	0321	281805501	Collar
0904	51100306S	B.H.M. Screw	0322	281810401	Retainer
0905	55060307F	T.R. Rivet	0326	282127401	Reflector
0906	54050300R	T.L. Washer OR	0327	281927401	Reflector
0911	51100306S	B.H.M. Screw	0329	281827101	Holder
0912	51100306S	B.H.M. Screw	0331	281927101	Holder
0923	54050400R	T.L. Washer OR	0401	281805101	Guide
0924	54020401E	Flat Washer P	0403	281816005	Bracket
0925	53110403E	Hexagon Nut	0407	281810603	Bearing
J001	YT0104011	Terminal, FM/AM Ant.	0408	285310601	Bearing
J002	YT0208002	Terminal, 8P	0413	281816010	Bracket
J003	YL0301021	Terminal, Ground	0414	257726201	Pulley
J004	YT0304002	Terminal, Spk.	0415	137011203	Shaft
J005	YT0304002	Terminal, Spk.	0418	281816011	Bracket
J009	YJ0400018	Jack, AC Outlet	0419	127126201	Pulley
J010	YJ0400018	Jack, AC Outlet	0420	137011203	Shaft
C	286727340	Fly Wheel Assembly	0422	257912001	Insulator
0121	257706302	Escutcheon	0425	141511801	Spacer
0122	257706303	Escutcheon	0426	257710602	Bearing
0123	257727301	Fly Wheel	0427	285011202	Shaft
0410	285311201	Shaft	0428	54040402N	Spring Washer
0831	53110603A9	Hexagon Nut	0432	281916001	Bracket
0832	54040602A	Spring Washer	0433	281905301	Cover
0833	54020601E	Flat Washer P	0502	257816005	Bracket
D	286710340	Pointer Assembly	0503	257816006	Bracket
0210	281810301	Pointer	0504	550203041	S.H. Rivet
0211	281810302	Pointer	0506	145525901	Bush
0212	281805301	Cover			
M002	IN1008018	Lamp			
0104	281815401	Knob	0516	286726701	Heat Sink
0106	281815402	Knob	0517	286716001	Bracket
0117	281825701	Lid	0520	282016007	Bracket
0118	281825702	Lid	0524	281811806	Spacer
0131	281912002	Insulator	0530	282026702	Heat Sink
0206	281811801	Spacer	0602	281800401	Table
0208	281810701	Sheet	0603	281810105	Support
0217	275905701	Leg	0612	282110901	Shield
0221	286730201	Dial	0613	286710901	Shield
			0628	286726901	Protector
			0701	281915901	Drum
			0703	71101569M	Spring
			0706	282010701	Sheet
			0710	282110103	Support
			0711	120225801	Hook

REF. DESIG.	MARANTZ. PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
0716	273025901	Bush	1102	51100306S9	B.H.M. Screw
0718	138200503	Clamper	1103	51100306S9	B.H.M. Screw
0722	72080802A	String	1104	51100306S9	B.H.M. Screw
0725	257711803	Spacer	1106	51570306B0	P.H. Tapt Screw
0729	282111801	Spacer	1108	51100306S9	B.H.M. Screw
0732	282100501	Clamper	1110	51100306S9	B.H.M. Screw
0734	281927103	Holder	1121	51570306B0	P.H. Tapt Screw
0802	51570305B0	P.H. Tapt Screw	1127	51570312B0	P.H. Tapt Screw
0804	51570306B0	P.H. Tapt Screw	1129	51570306B0	P.H. Tapt Screw
0806	51570312B0	P.H. Tapt Screw	1130	51570306B0	P.H. Tapt Screw
			1133	51570306B0	P.H. Tapt Screw
			1202	51650304D9	Set Screw H.P.
0807	54050300R	T.L. Washer OR			
0808	51100306E9	B.H.M. Screw	1212	56382540G	Eyelet
0809	51040306A9	F.H.M. Screw	1214	54020301E	Flat Washer P
0810	51640410D9	Set Screw C.P	1216	51100310S9	B.H.M. Screw
0811	54040402A	Spring Washer	1217	53110303E9	Hexagon Nut
0812	53110403E9	Hexagon Nut	1218	54050300R	T.L. Washer OR
0814	51570408B0	P.H. Tapt Screw			
0815	51570306B0	P.H. Tapt Screw			
0816	51570306B0	P.H. Tapt Screw			
0818	51042606S0	F.H.M. Screw			
0820	51570306B0	P.H. Tapt Screw			
0821	51570306B0	P.H. Tapt Screw			
0822	51570306B0	P.H. Tapt Screw			
0824	51570306B0	P.H. Tapt Screw			
0825	51570306B0	P.H. Tapt Screw			
0909	51100306S9	B.H.M. Screw			
0910	51100306S9	B.H.M. Screw	P100	YD2867001 (ZZ2867001)	P.C. Board FM Front & AM P.C. Board Assembly
0916	53110303E9	Hexagon Nut			RESISTORS
0919	51100310S9	B.H.M. Screw			(All resistors are $\pm 5\%$, 1/4W and carbon type, unless otherwise indicated.)
0920	54050300R	T.L. Washer OR	R101	RT0510214	1K Ω
0921	53110303E9	Hexagon Nut	R102	RT0533214	3.3K Ω
0926	51122608E	T.H.M. Screw	R103	RT0518314	18K Ω
.0928	51100406S9	B.H.M. Screw	R104	RT0522214	2.2K Ω
0930	51100406S9	B.H.M. Screw	R105	RT0533114	330 Ω
0931	54020401S	Flat Washer P	R106	RT0518414	180K Ω
0933	51100410A9	B.H.M. Screw	R107	RT0513314	13K Ω
0934	54040402W	Spring Washer	R108	RT0522214	2.2K Ω
0935	54020401E	Flat Washer P	R109	RT0515214	1.5K Ω
1002	51570305B0	P.H. Tapt Screw	R110	RT0582314	82K Ω
1003	51570306B0	P.H. Tapt Screw			
1006	51570305B0	P.H. Tapt Screw	R111	RT05222114	220 Ω
1008	51100312E9	B.H.M. Screw	R112	RT0518414	180K Ω
1009	53110303E9	Hexagon Nut	R113	RT0518314	18K Ω
1010	54040302N	Spring Washer	R114	RT0556114	560 Ω
1011	62031650W	Lug	R115	RT0515214	1.5K Ω
1013	51100306S9	B.H.M. Screw	R116	RT0518314	18K Ω
1015	51100308S9	B.H.M. Screw	R117	RT0547314	47K Ω
1016	51570408B0	P.H. Tapt Screw	R118	RT0510214	1K Ω
1017	51102606A0	B.H.M. Screw	R119	RT05222114	220 Ω
1018	53110501A9	Hexagon Nut	R120	RT0512214	1.2K Ω
1026	51570408B0	P.H. Tapt Screw			
1031	51570408B0	P.H. Tapt Screw	R121	RT0522214	2.2K Ω
1033	54020401A	Flat Washer P	R122	RT0547214	4.7K Ω
1034	62031650W	Lug	R123	RT0522414	220K Ω
1035	54050300R	T.L. Washer OR	R124	RT0518214	1.8K Ω
			R125	RT0547214	4.7K Ω

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R126	RT0510414	100KΩ	C141	DD1615003	Ceramic 15pF, ±10%
R127	RT0510114	100Ω	C142	DK1710301	Ceramic 0.01μF, ±20%
R128	RT0510114	100Ω	C143	DK1710301	Ceramic 0.01μF, ±20%
R129	RT0510114	100Ω	C144	DD1205001	Ceramic 5pF, ±1pF
R130	RT0510314	10KΩ	C145	DD1205001	Ceramic 5pF, ±1pF
R131	RT0513314	13KΩ	C146	DD1615001	Ceramic 15pF, ±10%
R132	RT0522314	22KΩ	C147	DD1530101	Ceramic 300pF, ± 5%
R133	RT0510414	100KΩ	C148	DK1710201	Ceramic 0.001μF, ±20%
R134	RT0533314	33KΩ	C149	DK1710301	Ceramic 0.01μF, ±20%
R135	RT0510514	1MΩ	C150	DK1710301	Ceramic 0.01μF, ±20%
R136	RT0522114	220Ω	C151	EA2270169	Electroly 220μF, 16V
R137	RT0518314	18KΩ	C152	CT1100008	Trimming 1.5pF – 11.5pF
R138	RT0522314	22KΩ	C153	EA1070169	Electroly 100μF, 16V
R139	RT0512214	1.2KΩ			
R140	RT0510114	100Ω			
R141	RT0547414	470KΩ			
R142	RT0533214	3.3KΩ	L101	LO1001034	COILS AND TRANSFORMERS
R143	RT0510214	1KΩ	L102	L11028002	AM OSC Coil
R144	RT0515214	1.5KΩ	L103	L11001048	AM IF Coil
R145	RT0556214	5.6KΩ	L106	LA1004606	AM IFT
R146	RT0515114	150Ω	L107	LA1027809	FM ANT Coil
		CAPACITORS	L108	LO1203601	FM RF Coil
C101	CA3240007	Variable Tuning Capacitor	L109	L11001601	FM OSC Coil
C102	DF1710301	Film 0.01μF, ± 20%	L110	LC1751001	FM IFT
C103	DF1740301	Film 0.04μF, ± 20%			Choke Coil
C104	EA1060169	Electroly 10μF, 16V	L111	LC1752001	Choke Coil
C105	DF6536150	Film 360pF, ± 5%	H101	HT309411B	SEMICONDUCTORS
C106	DD1620004	Ceramic 20pF, ±10%	H102	HT309411B	Transistor 2SC941 (O)
C107	DF1633201	Film 3300pF, ±10%	H103	HT3037210	Transistor 2SC372
C108	EA3360109	Electroly 33μF, 10V	H104	HT3037210	Transistor 2SC372
C109	DF1747201	Film 4700pF, ±20%	H105	HT306441B	Transistor 2SC644
C110	DF1668201	Film 6800pF, ±10%	H106	HD1000105	Diode IN60
C111	DF1740301	Film 0.04μF, ± 20%	H107	HD1000105	Diode IN60
C112	EA1060169	Electroly 10μF, 16V	H108	HD1000105	Diode IN60
C113	DF1740301	Film 0.04μF, ± 20%	H109	HD1000105	Diode IN60
C114	DF1740301	Film 0.04μF, ± 20%	H110	HF200191A	FET 2SK19 (Y)
C115	EA1060169	Electroly 10μF, 16V	H111	HT308291B	Transistor 2SC829 (B)
C116	EA2260109	Electroly 22μF, 10V	H112	HT305351B	Transistor 2SC535 (B)
C117	DF1740301	Film 0.04μF, ± 20%			MISCELLANEOUS
C118	EA1060169	Electroly 10μF, 16V	J101	YP1000094	Plug
C119	EA1060169	Electroly 10μF, 16V	J103	YP1000094	Plug
C120	DF1740301	Film 0.04μF, ± 20%	J104	YP1000094	Plug
C121	DF1710301	Film 0.01μF, ± 20%	J105	YP1000094	Plug
C123	EA1060169	Electroly 10μF, 16V	J106	YP1000094	Plug
C124	DF1740301	Film 0.04μF, ± 20%	J107	YP1000094	Plug
C125	DD1650101	Ceramic 500pF, ±10%	J108	YP1000094	Plug
C126	DF1747201	Film 4700pF, ±20%	J109	YP1000094	Plug
C127	DF1722201	Film 2200pF, ±20%	J110	YP1000094	Plug
C128	DF1768301	Film 0.068μF, ±20%	J111	YP1000094	Plug
C129	EA1060169	Electroly 10μF, 16V	J112	YP1000094	Plug
C130	EA2270069	Electroly 220μF, 6.3V	J113	YP1000094	Plug
C131	EA1060169	Electroly 10μF, 16V	P200	YD2867002 (ZZ2867002)	P.C. Board FM IF
C132	DD1205001	Ceramic 5pF, ±1pF			
C133	DK1710201	Ceramic 0.001μF, ± 20%			
C134	DK1710201	Ceramic 0.001μF, ± 20%			
C135	DK1710301	Ceramic 0.01μF, ± 20%			
C136	DK1710301	Ceramic 0.01μF, ± 20%			
C137	DD1210001	Ceramic 10pF, ± 1pF			
C138	DD1525002	Ceramic 25pF ±5%			
C139	DD1207003	Ceramic 7pF, ± 1pF			
C140	DD1615003	Ceramic 15pF, ± 10%			
					RESISTORS
					(All resistors are ±5%, 1/4W and carbon type, unless otherwise indicated.)
			R201	RT0515114	150Ω
			R202	RT0547114	470Ω

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION		REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	
R203	RT0515114	150Ω		C204	DK1710301	Ceramic	0.01μF, ±20%
R204	RT0515214	1.5KΩ		C205	DK1710301	Ceramic	0.01μF, ±20%
R205	RT0533214	3.3KΩ		C206	DK1840302	Ceramic	0.04μF, +80% -20%
R206	RT0510214	1KΩ		C207	DD1510101	Ceramic	100pF, ±5%
R207	RT0510214	1KΩ		C208	DK1710301	Ceramic	0.01μF, ±20%
R208	RT0510214	1KΩ		C209	DK1710301	Ceramic	0.01μF, ±20%
R209	RA0102015	Trimming	1KΩ (B)	C210	DK1840301	Ceramic	0.04μF, +80% -20%
R210	RT0533214	3.3KΩ		C211	DD1207001	Ceramic	7pF, ±1pF
R211	RT0515114	150Ω		C212	DK1710301	Ceramic	0.01μF, ±20%
R212	RT0510214	1KΩ		C213	DK1710301	Ceramic	0.01μF, 20%
R213	RT0510214	1KΩ		C214	DK1840301	Ceramic	0.04μF, +80% -20%
R214	RT0547214	4.7KΩ		C215	DD1510101	Ceramic	100pF, ±15%
R215	RT0515314	15KΩ		C216	DK1710301	Ceramic	0.01μF, ±20%
R216	RT0515114	150Ω		C217	DK1710301	Ceramic	0.01μF, ±20%
R217	RT0510214	1KΩ		C218	DK1710301	Ceramic	0.01μF, ±20%
R218	RT0510214	1KΩ		C219	DK1710301	Ceramic	0.01μF, ±20%
R219	RT0582214	8.2KΩ		C220	DK1840302	Ceramic	0.04μF, +80% -20%
R220	RT0515314	15KΩ		C221	DK1840302	Ceramic	0.04μF, +80% -20%
R221	RT0515114	150Ω		C222	EA1060169	Electroly	10μF, 16V
R222	RT0510214	1KΩ		C223	EA1060169	Electroly	10μF, 16V
R223	RT0510214	1KΩ		C224	DD1620101	Ceramic	200pF, ±10%
R224	RT0515114	150Ω		C225	DD1620101	Ceramic	200pF, ±10%
R225	RT0510414	100KΩ		C226	DD1620101	Ceramic	200pF, ±10%
R226	RT0515114	150Ω		C227	EA1060169	Electroly	10μF, 16V
R227	RT0582214	8.2KΩ		C228	DK1710301	Ceramic	0.01μF, ±20%
R228	RT0515314	15KΩ		C229	DK1710301	Ceramic	0.01μF, ±20%
R229	RT0510214	1KΩ		C230	DK1840302	Ceramic	0.04μF, +80% -20%
R231	RT0522114	220Ω		C231	DK1840302	Ceramic	0.04μF, +80% -20%
R232	RT0582114	820Ω		C232	DK1840302	Ceramic	0.04μF, +80% -20%
R233	RT0582114	820Ω		C233	EA4750359	Electroly	4.7μF, 35V
R234	RT0568214	6.8KΩ		C234	EA1060169	Electroly	10μF, 16V
R235	RT0568214	6.8KΩ		C235	EA3360259	Electroly	33μF, 25V
R236	RT0510114	100Ω		SEMICONDUCTORS			
R237	RT0510314	10KΩ		H201	HT308291C	Transistor	2SC829 (C)
R238	RT0547214	4.7KΩ		H202	HT308291C	Transistor	2SC829 (C)
R239	RT0518314	18KΩ		H203	HT308291C	Transistor	2SC829 (C)
R240	RT0510214	1KΩ		H204	HT308291C	Transistor	2SC829 (C)
R241	RT0520214	2KΩ		H205	HT308291C	Transistor	2SC829 (C)
R242	RT0556314	56KΩ		H206	HT308291B	Transistor	2SC829 (B)
R243	RT0556114	560Ω		H207	HT3073310	Transistor	2SC733 GR
R244	RT0515314	1.5KΩ		H208	HT3037310	Transistor	2SC373
R245	RA0104012	Trimming	100KΩ (B)	H209	HT3037310	Transistor	2SC373
R246	RT0512414	120KΩ		H210	HD1000105	Diode	IN60
R247	RT0556214	5.6KΩ		H211	HD1000105	Diode	IN60
R248	RT0522314	22KΩ		H212	HD1000105	Diode	IN60
R249	RT0533314	33KΩ		H213	HD1000105	Diode	IN60
R250	RT0515414	150KΩ		H214	HD2001105	Diode	IS1555
R251	RT0510414	100KΩ		H215	HD2001105	Diode	IS1555
R252	RT0522414	220KΩ		H216	HD1000105	Diode	IN60
R253	RT0533314	33KΩ		H217	HD1000105	Diode	IN60
R254	RT0510114	100Ω		H218	HD1000105	Diode	IN60
R255	RT0510114	100Ω		H219	HD1000105	Diode	IN60
R256	RT0510114	100Ω		H220	HD1000105	Diode	IN60
R257	RT0510114	100Ω		MISCELLANEOUS			
R258	RT0510114	100Ω		F201	FF1107004		SFC 10.7 MC
R259	RT0510114	100Ω		F202	FF1107004		SFC 10.7 MC
R260	RT0520214	2KΩ		J201	YP1000094	Plug	
R261	RT0556214	5.6KΩ		J202	YP1000094	Plug	
CAPACITORS				J203	YP1000094	Plug	
C201	DK1710301	Ceramic	0.01μF, ±20%	J204	YP1000094	Plug	
C202	DK1710301	Ceramic	0.01μF, ±20%	J205	YP1000094	Plug	
C203	DK1840302	Ceramic	0.04μF, -20%				

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	
J206	YP1000094	Plug	
J207	YP1000094	Plug	
J208	YP1000094	Plug	
J209	YP1000094	Plug	
J210	YP1000094	Plug	
L201	LI1018802	IFT	DET.
P300	YD2867003 (ZZ2867003)	P.C. Board P.C. Board Assembly	
		RESISTORS (All resistors are $\pm 5\%$, 1/4W and carbon type, unless otherwise indicated.)	
R301	RT0510214	1K Ω	
R302	RT0547414	470K Ω	
R303	RT0547414	470K Ω	
R304	RT0515214	1.5K Ω	
R305	RT0582314	82K Ω	
R306	RT0527314	27K Ω	
R307	RT0512314	12K Ω	
R308	RT0522114	220 Ω	
R309	RT0512214	1.2K Ω	
R310	RT0510414	100K Ω	
R311	RT0527314	27K Ω	
R312	RT0522214	2.2K Ω	
R313	RT0539114	390 Ω	
R314	RT0556214	5.6K Ω	
R315	RT0515214	1.5K Ω	
R316	RT0515314	15K Ω	
R317	RT0512214	1.2K Ω	
R318	RT0515314	15K Ω	
R319	RT0510314	10K Ω	
R320	RT0510314	10K Ω	
R321	RT0510314	10K Ω	
R322	RT0510314	10K Ω	
R323	RT0527314	27K Ω	
R324	RT0527314	27K Ω	
R325	RT0582414	820K Ω	
R326	RT0582414	820K Ω	
R327	RT0510414	100K Ω	
R328	RT0510414	100K Ω	
R329	RA0502013	Trimming	5 K Ω (B)
R330	RT0510214	1K Ω	
R331	RT0522314	22K Ω	
R332	RT0522314	22K Ω	
R333	RT0515214	1.5K Ω	
R334	RT0515214	1.5K Ω	
R335	RT0510314	10K Ω	
R336	RT0510314	10K Ω	
R337	RT0510214	1K Ω	
R338	RT0510214	1K Ω	
R339	RT0512214	1.2K Ω	
R340	RT0512214	1.2K Ω	
R341	RT0539214	3.9K Ω	
R342	RT0539214	3.9K Ω	
R343	RT0515314	15K Ω	
R344	RT0515314	15K Ω	
R345	RT0547414	470K Ω	
R346	RT0547414	470K Ω	
R347	RT0522414	220K Ω	
R348	RT0522414	220K Ω	

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	
R349	RT0547214	4.7K Ω	
R350	RT0547214	4.7K Ω	
R351	RT0522414	220K Ω	
R352	RT0522414	220K Ω	
R353	RT0533114	330 Ω	
R354	RT0533114	330 Ω	
R355	RT1022114	220 Ω	
R356	RT0520214	2K Ω	$\pm 10\%, 1/4W$
		CAPACITORS	
C301	EA1060169	Electroly	10 μF , 16V
C302	EA1060169	Electroly	10 μF , 16V
C303	DF1647201	Film	0.0047 μF , $\pm 10\%$
C304	EM1040251	Electroly	0.1 μF , 25V
C305	DF5547201	Film	0.0047 μF , $\pm 5\%$
C306	EA2270169	Electroly	220 μF , 16V
C307	EA1060169	Electroly	10 μF , 16V
C308	EA1070169	Electroly	100 μF , 16V
C309	DF1582201	Film	0.0082 μF , $\pm 5\%$
C310	DF1582201	Film	0.0082 μF , $\pm 5\%$
C311	DF1722401	Film	0.22 μF , $\pm 20\%$
C312	DF1722401	Film	0.22 μF , $\pm 20\%$
C313	EA3360109	Electroly	33 μF , 10V
C314	EA1060359	Electroly	10 μF , 35V
C315	EA1060359	Electroly	10 μF , 35V
C316	EA1060169	Electroly	10 μF , 16V
C317	EA1060169	Electroly	10 μF , 16V
C318	DF1627201	Film	0.0027 μF , $\pm 10\%$
C319	DF1627201	Film	0.0027 μF , $\pm 10\%$
C320	DF1610305	Film	0.01 μF , $\pm 10\%$
C321	DF1610305	Film	0.01 μF , $\pm 10\%$
C322	DF1612301	Film	0.012 μF , $\pm 10\%$
C323	DF1612301	Film	0.012 μF , $\pm 10\%$
C324	DF1612301	Film	0.012 μF , $\pm 10\%$
C325	DF1612301	Film	0.012 μF , $\pm 10\%$
C326	EA1060169	Electroly	10 μF , 16V
C327	EA1060169	Electroly	10 μF , 16V
C328	EV4740251	Electroly	0.47 μF , 25V
C329	EV4740251	Electroly	0.47 μF , 25V
C330	EA2270359	Electroly	220 μF , 35V
		COILS	
L301	LS1031001	MPX	
L302	LS1031002	MPX	
L303	LS1001505	MPX	
L304	LS1031003	Choke	
L305	LC2685001	Choke	
L306	LC2685001	Choke	
L307	LS1029003	Choke	
L308	LS1029003	Choke	
		SEMICONDUCTORS	
H301	HT3037210	Transistor	2SC372
H302	HT3037210	Transistor	2SC372
H303	HT3037210	Transistor	2SC372
H304	HT3037210	Transistor	2SC372
H305	HT307331C	Transistor	2SC733 GR or BL
H306	HT313271S	Transistor	2SC1327 S or T
H307	HT313271S	Transistor	2SC1327 S or T
H308	HT104942A	Transistor	2SA494 Y or GR
H309	HT104942A	Transistor	2SA494 Y or GR
H310	HT306441C	Transistor	2SC644 T

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION		REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	
H311	HT306441C	Transistor	2SC644 T	C907	DF5412201	Film	1200pF, 50V, ± 2%
H312	HD1000105	Diode	IN60	C908	DF5412201	Film	1200pF, 50V, ± 2%
H313	HD1000105	Diode	IN60	C909	EA4760169	Electroly	47μF, 16V
H314	HD1000101	Diode	IN34A	C910	EA4760169	Electroly	47μF, 16V
H315	HD1000101	Diode	IN34A	C911	DF5547201	Film	4700pF, 25V, ± 5%
H316	HD1000101	Diode	IN34A	C912	DF5547201	Film	4700pF, 25V, ± 5%
H317	HD1000101	Diode	IN34A	C913	DD1615001	Ceramic	15pF, 50V, ±10%
				C914	DD161500	Ceramic	15pF, 50V, ±10%
J301	YP1000094	Plug		C915	DD1650001	Ceramic	50pF, 50V, ±10%
J302	YP1000094	Plug		C916	DD1650001	Ceramic	50pF, 50V, ±10%
J303	YP1000094	Plug		C917	DF1747401	Film	0.47μF, 50V, ±20%
J304	YP1000094	Plug		C918	DF1747401	Film	0.47μF, 50V, ±20%
J305	YP1000094	Plug		C919	EA1070509	Electroly	100μF, 50V
J306	YP1000094	Plug		C922	DD1610101	Ceramic	100pF, 50V, ±10%
J307	YP1000094	Plug		C923	DD1610101	Ceramic	100pF, 50V, ±10%
J308	YP1000094	Plug					
P900	YD2821008 (ZZ2867108)	P.C. Board	For Phono Amp.	H901	HT313271T	Transistor	2SC1327 (T)
		P.C. Board Assembly		H902	HT313271T	Transistor	2SC1327 (T)
				H903	HT313271S	Transistor	2SC1327 (S)
				H904	HT313271S	Transistor	2SC1327 (S)
				H905	HT304580R	Transistor	2SC458LGA (B)
				H906	HT304580R	Transistor	2SC458LGA (B)
R901	RT0547314	47KΩ		J901	YP1000091	Plugs	MISCELLANEOUS
R902	RT0547314	47KΩ		J902	YP1000091	Plugs	
R903	RT0547114	470Ω		J903	YP1000091	Plugs	
R904	RT0547114	470Ω		J904	YP1000091	Plugs	
R905	RT0582114	820Ω		J905	YP1000091	Plugs	
R906	RT0582114	820Ω		J906	YP1000091	Plugs	
R907	RT0510414	100KΩ		J907	YP1000091	Plugs	
R908	RT0510414	100KΩ		J908	YP1000091	Plugs	
R909	RT0522314	22KΩ		J909	YP1000091	Plugs	
R910	RT0522314	22KΩ		J910	YP1000091	Plugs	
R911	RT0556314	56KΩ		P500	YD2821005 (ZZ2867105)	P.C. Board	Pre Amp.
R912	RT0556314	56KΩ				P.C. Board Assembly	
R913	RT0510414	100KΩ					
R914	RT0510414	100KΩ					
R915	RT0510314	- 10KΩ					
R916	RT0510314	10KΩ					
R917	RT0512314	12KΩ					
R918	RT0512314	12KΩ					
R919	RT0582414	820KΩ					
R920	RT0582414	820KΩ					
R921	RT0533214	3.3KΩ		R501	RT0510214	1KΩ	RESISTORS
R922	RT0533214	3.3KΩ		R502	RT0510214	1KΩ	(All resistors are ± 5%, 1/4W and
R923	RT0539414	390KΩ		R503	RT0582414	820KΩ	carbon type, unless otherwise
R924	RT0539414	390KΩ		R504	RT0582414	820KΩ	indicated.)
R925	RT0568314	68KΩ		R505	RT0527414	270KΩ	
R926	RT0568314	68KΩ		R506	RT0527414	270KΩ	
R927	RT0518214	1.8KΩ		R507	RT0556214	5.6KΩ	
R928	RT0518214	1.8KΩ		R508	RT0556214	5.6KΩ	
R929	RT0510314	10KΩ		R509	RT0522414	220KΩ	
R930	RT0510314	10KΩ		R510	RT0522414	220KΩ	
R931	RT0510114	100Ω		R511	RT0536114	360Ω	
				R512	RT0536114	360Ω	
				R513	RT0515414	150KΩ	
				R514	RT0515414	150KΩ	
				R515	RT0513314	13KΩ	
				R516	RT0513314	13KΩ	
				R517	RT0515314	15KΩ	
				R518	RT0515314	15KΩ	
C901	EE2250351	Electroly	2.2μF, 35V, ±20%	R519	RT0582114	820Ω	
C902	EE2250351	Electroly	2.2μF, 35V, ±20%	R520	RT0582114	820Ω	
C903	DD1650001	Ceramic	50pF, 50V, ±10%				
C904	DD1650001	Ceramic	50pF, 50V, ±10%				
C905	EE2260251	Electroly	22μF, 25V, ±20%				
C906	EE2260251	Electroly	22μF, 25V, ±20%				

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R523	RT0533214	3.3K	R614	RT0510414	100KΩ
C501	DF1722402	CAPACITORS	C601	DF1733301	CAPACITORS
C502	DF1722402	Film 0.22μF, ± 20%	C602	DF1733301	Film 0.033μF, ± 20%, 50V
C503	EA4750359	Film 0.22μF, ± 20%	C603	DF1668201	Film 0.033μF, ± 20%, 50V
C504	EA4750359	Electroly 4.7μF, 35V	C604	DF1668201	Film 0.0068μF, ± 10%, 50V
C505	EE1050501	Electroly 4.7μF, 35V	C605	DF1733301	Film 0.0068μF, ± 10%, 50V
C506	EE1050501	Electroly 1μF, 50V, ± 20%	C606	DF1733301	Film 0.033μF, ± 20%, 50V
C507	DD1630001	Electroly 1μF, 50V, ± 20%	C607	DD1510101	Film 0.033μF, ± 20%, 50V
C508	DD1630001	Ceramic 30pF	C608	DD1510101	Ceramic 100pF, ± 5%, 50V
C509	EA1070109	Ceramic 30pF			Ceramic 100pF, ± 5%, 50V
C510	EA1070109	Electroly 100μF, 10V			
C511	EA1060359	Electroly 10μF, 35V	J601	YP1000094	MISCELLANEOUS
C512	EA1060359	Electroly 10μF, 35V	J602	YP1000094	Plug
C513	EV4740251	Electroly 0.47μF, 25V	J603	YP1000094	Plug
C514	EV4740251	Electroly 0.47μF, 25V	S601	SP0204003	Plug
C515	EA1070359	Electroly 100μF, 35V	P650	YD2821006 (ZZ2867106)	Pushswitch
C516	DD1650001	Ceramic 50pF, 50V, ± 10%			P.C. Board Tone Control
C517	DD1650001	Ceramic 50pF, 50V, ± 10%			P.C. Board Assembly
H501	HT304580Z	SEMICONDUCTORS	R651	RT0568214	RESISTORS
H502	HT304580Z	Transistor 2SC458LG (D)	R652	RT0568214	(All resistors are ± 5%, 1/4W and
H503	HT304580Y	Transistor 2SC458LG (C)	R653	RT0512214	carbon type, unless otherwise
H504	HT304580Y	Transistor 2SC458LG (C)	R654	RT0512214	indicated.)
H505	HT304580Y	Transistor 2SC458LG (C)	R655	RM0503038	6.8KΩ
H506	HT304580Y	Transistor 2SC458LG (C)	R656	RM0503038	6.8KΩ
J501	YP1000091	MISCELLANEOUS	R657	RT0527214	1.2KΩ
J502	YP1000091	Plug	R658	RT0527214	1.2KΩ
J503	YP1000091	Plug	R659	RT0522414	2.7KΩ
J504	YP1000091	Plug	R660	RT0522414	2.7KΩ
J505	YP1000091	Plug			220KΩ
J506	YP1000091	Plug			220KΩ
J507	YP1000091	Plug			
J508	YP1000091	Plug			
J509	YP1000091	Plug	C651	DF1756201	CAPACITORS
J510	YP1000091	Plug	C652	DF1756201	Film 0.0056μF, ± 20%, 50V
J511	YP1000091	Plug	C653	DF1733303	Film 0.0056μF, ± 20%, 50V
J512	YP1000091	Plug	C654	DF1733301	Film 0.033μF, ± 20%, 50V
J513	YP1000091	Plug	C655	DF1733301	Film 0.033μF, ± 20%, 50V
J514	YP1000091	Plug	C656	DF1733301	Film 0.033μF, ± 20%, 50V
J515	YP1000091	Plug	C657	DF1722402	Film 0.22μF, ± 20%, 50V
P600	YD2819001 (ZZ2867101)	P.C. Board Filter, Loudness P.C. Board Assembly	C658	DF1722402	Film 0.22μF, ± 20%, 50V
		RESISTORS			MISCELLANEOUS
		(All resistors are ± 5%, 1/4W and	J651	57219520W	Lug Eyelet
		carbon type, unless otherwise	J652	57219520W	Lug Eyelet
		indicated.)	J653	57219520W	Lug Eyelet
R601	RT0522414	220KΩ	J654	57219520W	Lug Eyelet
R602	RT0522414	220KΩ	J655	57219520W	Lug Eyelet
R603	RT0510514	1MΩ	J656	57219520W	Lug Eyelet
R604	RT0510514	1MΩ			
R607	RT0547214	4.7KΩ			
R608	RT0547214	4.7KΩ			
R609	RT0522514	2.2MΩ			
R610	RT0522514	2.2MΩ			
R611	RT0510314	10KΩ			
R612	RT0510314	10KΩ			
R613	RT0510414	100KΩ	R701	RT0510214	RESISTORS
			R702	RT0510214	(All resistors are ± 5%, 1/4W and
			R703	RT0568414	carbon type, unless otherwise
			R704	RT0568414	indicated.)
					1KΩ
					1KΩ
					680KΩ
					680KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	
R705	RT0556314	56KΩ	
R706	RT0556314	56KΩ	
R707	RT0524314	24KΩ	
R708	RT0524314	24KΩ	
R709	RT0556214	5.6KΩ	
R710	RT0556214	5.6KΩ	
R711	RT0518114	180Ω	
R712	RT0518114	180Ω	
R713	RC1022212	Solid	2.2KΩ ±10%, 1/2W
R714	RC1022212	Solid	2.2KΩ ±10%, 1/2W
R715	RT0527214	2.7KΩ	
R716	RT0527214	2.7KΩ	
R717	RT0582314	82KΩ	
R718	RT0582314	82KΩ	
R719	RT0512314	12KΩ	
R720	RT0512314	12KΩ	
R721	RC1033212	Solid	3.3KΩ ±10%, 1/2W
R722	RC1033212	Solid	3.3KΩ ±10%, 1/2W
R723	RA0104012	Trimming	100KΩ (B)
R724	RA0104012	Trimming	100KΩ (B)
R725	RT0510114	100Ω	
R726	RT0510114	100Ω	
R727	RT0582214	8.2KΩ	
R728	RT0582214	8.2KΩ	
R729	RA0501005	Trimming	470Ω (B)
R730	RA0501005	Trimming	470Ω (B)
R731	GF0539114	Oxide	390Ω
R732	GF0539114	Oxide	390Ω
R733	GF0539114	Oxide	390Ω
R734	GF0539114	Oxide	390Ω
R735	GF0510014	Oxide	10Ω
R736	GF0510014	Oxide	10Ω
R737	GF0522114	Oxide	220Ω
R738	GF0522114	Oxide	220Ω
R739	GF0522114	Oxide	220Ω
R740	GF0522114	Oxide	220Ω
R741	GF0510214	Oxide	1KΩ
R742	GF0510214	Oxide	1KΩ
R743	GF0522014	Oxide	22Ω
R744	GF0522014	Oxide	22Ω
R745	GF0510214	Oxide	1KΩ
R746	GF0510214	Oxide	1KΩ
R747	RW1000503	Wire Wound	0.5Ω ± 10%, 3W
R748	RW1000503	Wire Wound	0.5Ω ± 10%, 3W
R749	RW1000503	Wire Wound	0.5Ω ± 10%, 3W
R750	RW1000503	Wire Wound	0.5Ω ± 10%, 3W
R753	RC1010012	Solid	10Ω ± 10%, 1/2W
R754	RC1010012	Solid	10Ω ± 10%, 1/2W
R755	RT0536314	36KΩ	
R756	RT0536314	36KΩ	
R757	RT0536314	36KΩ	
R758	RT0536314	36KΩ	
CAPACITORS			
C701	EE4740501	Electroly	0.47μF, 50V, ± 20%
C702	EE4740501	Electroly	0.47μF, 50V, ± 20%
C703	EA2270359	Electroly	220μF, 35V
C704	EA2270359	Electroly	220μF, 35V
C705	DD1650001	Ceramic	50pF, 50V, ± 10%
C706	DD1650001	Ceramic	50pF, 50V, ± 10%
C707	EA4760509	Electroly	47μF, 50V
C708	EA4760509	Electroly	47μF, 50V
C709	EA4760509	Electroly	47μF, 50V

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	
C710	EA4760509	Electroly	47μF, 50V
C711	EA1060359	Electroly	10μF, 35V
C712	EA1060359	Electroly	10μF, 35V
C713	DD1550050	Ceramic	50pF, ± 5%
C714	DD1550050	Ceramic	50pF, ± 5%
C715	EA1070109	Electroly	100μF, 10V
C716	EA1070109	Electroly	100μF, 10V
C717	EA2260359	Electroly	22μF, 35V
C718	EA2260359	Electroly	22μF, 35V
C719	DD1650001	Ceramic	50pF, ± 10%
C720	DD1650001	Ceramic	50pF, ± 10%
C721	DD1650001	Ceramic	50pF, ± 10%
C722	DD1650001	Ceramic	50pF, ± 10%
C723	DK1610150	Ceramic	100pF, ± 10%
C724	DK1610150	Ceramic	100pF, ± 10%
C725	DF1710452	Film	0.1μF, 200V, ± 20%
C726	DF1710452	Film	0.1μF, 200V, ± 20%
SEMICONDUCTORS			
H701	HT309452A	Transistor	2SC945 Q, R
H702	HT309452A	Transistor	2SC945 Q, R
H703	HT311751H	Transistor	2SC1175 D
H704	HT311751H	Transistor	2SC1175 D
H705	HT303711B	Transistor	2SC371 O
H706	HT303711B	Transistor	2SC371 O
H707	HT105621B	Transistor	2SA562
H708	HT105621B	Transistor	2SA562
H713	HV0000705	Varistor	S3016R
H714	HV0000705	Varistor	S3016R
H715	HD1000105	Diode	IN60
H716	HD1000105	Diode	IN60
H717	HD1000105	Diode	IN60
H718	HD1000105	Diode	IN60
MISCELLANEOUS			
J701	YP1000091	Plug	
J702	YP1000091	Plug	
J703	YP1000091	Plug	
J704	YP1000091	Plug	
J705	YP1000091	Plug	
J706	YP1000091	Plug	
J707	YP1000091	Plug	
J708	YP1000091	Plug	
J709	YP1000091	Plug	
J710	YP1000091	Plug	
J711	YP1000091	Plug	
J712	YP1000091	Plug	
J713	YP1000091	Plug	
J714	YP1000091	Plug	
J715	YP1000091	Plug	
J716	YP1000091	Plug	
J717	YP1000091	Plug	
J718	YP1000091	Plug	
J719	YP1000091	Plug	
J720	YP1000091	Plug	
J721	YP1000091	Plug	
J722	YP1000091	Plug	
J723	YP1000091	Plug	
J724	YP1000091	Plug	
J725	YP1000091	Plug	
J726	YP1000091	Plug	

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION		REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	
P800	YD2867005 (ZZ2867005)	P.C. Board	Power Supply	R011	RT0510214	Carbon	1KΩ ± 5%, 1/4W
		P.C. Board Assembly		R012	RC1056012	Solid	56Ω ± 5%, 1/2W
				R013	RC1002212	Solid	2.2Ω ± 5%, 1/2W
				R014	RC1002212	Solid	2.2Ω ± 5%, 1/2W
				R015	RT0533214	Carbon	3.3KΩ ± 5%, 1/4W
		RESISTORS				CAPACITORS	
R801	GF0527114	Oxide	270Ω ± 5%, 1/4W	C001	EA3360109	Electroly	33μF, 10V
R802	GT0527101	Solid	270Ω ± 5%, 1W	C002	DK1710301	Ceramic	0.01μF, 50V
R803	GT0533101	Solid	330Ω ± 5%, 1W	C003	DK1710301	Ceramic	0.01μF, 50V
R805	RT0568214	Carbon	6.8KΩ ± 5%, 1/4W	C004	EC2280502	Electroly	2200μF, 50V
R806	RT0533314	Carbon	33KΩ ± 5%, 1/4W	C005	EC2280502	Electroly	2200μF, 50V
				C006	EC4780632	Electroly	4700μF, 63V
				C007	DF2722350	Film	0.02μF, 400V, ± 20%
				C008	DF2722350	Film	0.02μF, 400V, ± 20%
				C009	DF1747351	Film	0.047μF, 600V, ± 20%
		CAPACITORS				COILS AND TRANSFORMERS	
C801	DK1810351	Ceramic	0.01μF, 500V, +100% -10%	L005	LC1302001	Choke Coil	
C802	DK1810351	Ceramic	0.01μF, 500V, +100% -10%	L001	LF1120024	Ant. Coil	AM
C803	EA3370631	Electrolytic	330μF, 63V	L002	TS1850202	Power Transformer	
C804	EA4770359	Electrolytic	470μF, 35V	L003	LL2391512	Choke Coil	
C805	EA4770169	Electrolytic	470μF, 16V	L004	LL2391512	Choke Coil	
C806	EA4760509	Electrolytic	47μF, 50V				
C808	EA4760509	Electrolytic	47μF, 50V				
C809	EA1070509	Electrolytic	100μF, 50V				
C810	EA4770169	Electrolytic	470μF, 16V				
		SEMICONDUCTORS				SEMICONDUCTORS	
H802	HT312132A	Transistor	2SC1213 B or C	H005	HV0000212	Varistor	SV-3A
H804	HD2000413	Diode	SIB-01-02	H006	HV0000212	Varistor	SV-3A
H805	HD2000413	Diode	SIB-01-02	H007	HD2001510	Diode	5B1
H806	HD3002209	Diode	BZ-120				
H808	HD2000413	Diode	SIB-01-02				
		MISCELLANEOUS				MISCELLANEOUS	
J801	YP1000091	Plug		J013	YJ0800019	Socket	
J802	YP1000091	Plug		J014	YJ0800019	Socket	
J803	YP1000091	Plug		J015	YJ0800019	Socket	
J808	YP1000091	Plug		M001	IM1104203	DC Meter	Signal (AM, FM)
J809	YP1000091	Plug		J016	YJ0800019	Socket	
J810	YP1000091	Plug		J017	YJ0800019	Socket	
J811	YP1000091	Plug					
J812	YP1000091	Plug		M005	IN1008007	Lamp	8V, 0.2A
J813	YP1000091	Plug		M006	IN1008007	Lamp	8V, 0.2A
J814	YP1000091	Plug		M007	IN1008007	Lamp	8V, 0.2A
				M008	IN1008007	Lamp	8V, 0.2A
J815	YP1000091	Plug		M009	IN1008007	Lamp	8V, 0.2A
				M010	IN1008007	Lamp	8V, 0.2A
P850	YD2867004 (ZZ2867004)	P.C. Board	Stereo Lamp				
		P.C. Board Assembly					
M851	IN10063010	Lamp	6.3V, 0.04A				
M852	IN10063010	Lamp	6.3V, 0.04A				
J851	YP10000940	Plug		S001	SR0704001	Rotary Switch	Function
J852	YP10000940	Plug		S002	SP0402003	Pushswitch	Tape Monitor, Mono
				S003	SP0402004	Pushswitch	SPK Main, Remote
		RESISTORS		S004	SP0201010	Pushswitch	Power Supply
R001	RT0547214	Carbon	4.7KΩ ± 5%, 1/4W				
R002	RT0547214	Carbon	4.7KΩ ± 5%, 1/4W				
R003	RM0254020	Variable	250KΩ MN				
R004	RM0254021	Variable	250KΩ A				
R005	RJ1010101	Oxide	100Ω ± 10%, 1W	G001	BF1040001	Printed Compo.	120Ω +0.1μF
R006	RJ1010101	Oxide	100Ω ± 10%, 1W				
R007	RC1047012	Solid	47Ω ± 10%, 1/2W				
R008	RC1047012	Solid	47Ω ± 10%, 1/2W				
R009	RC1022512	Solid	2.2MΩ ± 10%, 1/2W				
R010	RT0510214	Carbon	1KΩ ± 5%, 1/4W				
				J018	YJ0800019	Socket	
				J006	YJ0100065	Jack	Head Phone

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION	
J008	YJ0800012	Socket	Fuse Holder
J020	YL0103011	Terminal	3P
F001	FS1020004	Fuse	2A
W001	YC0240010	AC Cord	
W005	YW2867001	Wire Material	
W006	YX2867001	Wire Material	

TECHNICAL SPECIFICATIONS

AUDIO CIRCUITS:

Rated continuous (RMS) power output per channel, both channels operating simultaneously,	20 Watts at 4 and 8 ohms 12 Watts at 16 ohms
Comparable Total Music Power (IHF)	45 Watts at 8 ohms
High-level hum and noise (ref. 20 Watts at 8 ohms)	-77dB
Phono hum and noise	1.5 μ V equivalent input
Dynamic range (phono input to tape recording output)	96dB
I.M. Distortion(SMPTE), at rated power	0.9%
Distortion decreases as output is lowered	
Total Harmonic Distortion, at rated power	0.9% Maximum
Distortion decreases as output is lowered	
Power Bandwidth (IHF) for 0.9% THD	10 Hz to 50,000 Hz
Damping Factor (ref. 8 ohms)	Greater than 45
Frequency Response	
Through phono	1.0dB
Input Sensitivity (for 15 Watts at 8 ohms)	
High-level	180 mV
Phono (1,000 Hz)	1.8mV
Input Impedance	
High-level	100,000 ohms
Phono	47,000 ohms
Channel Separation 20 Hz to 20,000 Hz	35 dB Minimum

FM SECTIONS:

IHF Usable Sensitivity	3.0 μ V
Selectivity	50 dB
Noise Quieting	-60 dB at 1.000 μ V
Total Harmonic Distortion, 400 Hz, 100% Mod	0.4% Maximum
Frequency Response (ref. 75 μ sec. de-emphasis)	± 1 dB 50 Hz to 15KHz
Stereo Separation	1,000 Hz 40 dB
Sub Carrier (38KHz) Suppression	60 dB

GENERAL:

Power Requirements	120V AC 50 to 60 Hz
At rated output, both channels operating	140 Watts
Idling Power (Volume Control at zero)	22.5 Watts
Dimensions	
Panel Width	17 $\frac{21}{64}$ Inches
Panel Height	5 $\frac{25}{64}$ Inches
Depth	14 Inches
Weight	
Unit alone	26.4 lbs
Packed for shipment	33 lbs

* These specifications and exterior designs may be changed for improvement without advance notice.



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